

The changing age profile of poverty in Europe

Massimo Baldini ^a, Andrea Barigazzi ^{a1}, Cristiano Gori ^b

^a University of Modena and Reggio Emilia, Modena, Italy

^b University of Trento, Trento, Italy

June 2026

Abstract

In recent years, the ageing of the global population has accelerated, driven by declining fertility rates and rising life expectancy. This demographic shift is also reshaping poverty, but the transformation remains not clearly visible in standard poverty indicators. To make it tractable, we develop a decomposition that separates changes in each age group's contribution to aggregate poverty into a poverty effect and a demographic effect. Applied to EU-SILC microdata for 22 European countries over 2012–2024, the decomposition shows that the ageing of poverty is already underway. While demographic change contributes positively to this trend in all countries, in many cases the stronger driver is the worsening of poverty conditions among the elderly. Country patterns vary: in Southern and Eastern Europe both effects compound, signalling a failure of income protection for older adults; in Nordic countries, improving conditions among the elderly partially offset the demographic effect. These results challenge the assumption, embedded in the social investment paradigm, that old-age poverty has been largely resolved by mature pension systems.

Keywords: poverty, ageing, Europe, decomposition analysis.

JEL codes: I32, I38, J11, J14.

¹ Corresponding author. Department of Economics Marco Biagi, University of Modena and Reggio Emilia, Via Jacopo Berengario 51, 41121, Modena, Italy. E-mail addresses: massimo.baldini@unimore.it (M. Baldini), andrea.barigazzi@unimore.it (A. Barigazzi), cristiano.gori@unitn.it (C. Gori). The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. The authors received no financial support for the research, authorship, and/or publication of this article.

1. Introduction

Over the past fifteen years, the European debate on poverty has mainly focused on younger and working-age groups, for whom the risk of poverty has increased in many European countries, especially since the 2008 financial crisis. The recession that followed had a particularly severe impact on the increasingly precarious working class, young people, migrants and families with children, exposing them to new forms of economic vulnerability, especially in Southern European countries and those forced to adopt austerity measures (Ayllón, 2015; Hick, 2016; Dagdeviren et al., 2017; Chen et al., 2018; Mussida & Parisi, 2020; Mussida & Sciulli, 2022; 2023). This shift has mirrored the growing relevance of labour market vulnerability, while poverty in later life has often been regarded as a less urgent issue, thanks to the stabilizing role of pension systems (OECD, 2015; Antczak & Zaidi, 2016; Andriopoulou et al., 2018; Hammer et al., 2022; European Commission, 2024a). So much so that the presence of older people within households has been regarded as a stabilizing economic factor, mitigating the risk of poverty for younger generations (Diris et al., 2017; Andriopoulou et al., 2018; Giarda & Moroni, 2018; Fabrizi & Mussida, 2020).

This shift in attention is also consistent with the rise of the social investment perspective in European social policy debate. Rather than focusing on compensating individuals once social risks have materialized, the social investment approach emphasizes policies aimed at strengthening human capital, facilitating labour market participation and preventing future disadvantage through investments in education, training, childcare and activation measures (Ferrera, 2016; Hemerijck, 2017; Hemerijck & Plavgo, 2021). Within this framework, public resources devoted to older individuals are primarily viewed as compensatory rather than productive expenditures, while investments in children, young adults and working-age populations occupy a more central position because they are expected to generate long-term economic and social returns.

However, this perspective risks overlooking the profound demographic transformations currently underway across Europe (European Commission, 2024b; Palomäki et al., 2024). In the EU-27, the median age has risen from around 38 years in the early 2000s to over 44 in 2023, reflecting both rising life expectancy and low fertility. The share of people aged 65 and over now exceeds one-fifth of the total population, while that of children and young adults has steadily declined. Although ageing proceeds at different speeds across countries — faster in Southern Europe and slower in the Nordic area — the trend is universal. According to Eurostat projections, by mid-century almost 30% of the EU-27 population is expected to be aged 65 or over.

Population ageing generates significant divergences between trends in poverty incidence by age group and changes in the composition of the poor. In many European countries, poverty rates remain higher among younger people, which might suggest that population ageing has a positive effect by automatically reducing the overall poverty rate. However, this reasoning has two important limitations. First, in recent years poverty among those aged 65 and over has risen in several countries. According to Eurostat, in 2013 the relative poverty rate (60% threshold) among people aged 65+ exceeded that of those under 18 in only 7 out of 27 EU countries; by 2024, this number had increased to 13. Second, such an interpretation overlooks the dynamics of absolute numbers, ignoring the growing number of older individuals living in poverty. Even if the older population may be less affected

in relative terms, the absolute increase in the number of older individuals can produce a significant shift in the composition of poverty — one with important implications for inequality and income distribution (von Weizsäcker, 1996; Dolls et al., 2019; Hsieh, 2023). According to Eurostat data, the total number of people under the age of 18 living in poverty (i.e. with disposable equivalent income less than 60% of median national equivalent income) in the EU-27 decreased from 16.92 million in 2013 to 15.53 million in 2025, while the number of people aged 65 and over living in poverty increased from 10.49 million to 15.59 million over the same period. In other regions of the world, particularly in Asia, old-age poverty has already become a matter of growing public concern: in countries such as Japan, China, South Korea and Hong Kong, population ageing combined with less generous pension systems and the weakening of traditional family support has rapidly increased economic vulnerability among the older population (La Grange & Lock, 2002; Shirahase, 2015; Chan & Chou, 2018).

Demographic ageing is also expected to increase pressure on social protection systems (European Commission, 2024a). Historically, economic security in old age across Europe has relied on public pension systems, which have acted as stabilizing mechanisms, rebalancing intra- and intergenerational income dynamics and mitigating poverty risks even during recessions (Antczak & Zaidi, 2016). However, the progressive ageing of the population, the stagnation of productivity growth, and pressures on public finances are making it increasingly difficult to sustain generous pension provisions. Recent pension reforms have prioritized financial sustainability, often at the expense of benefit adequacy (OECD, 2021). According to Hinrichs (2021), the introduction of privatized and individualized elements in pension schemes has weakened redistribution, increasing poverty risks particularly among individuals with fragmented careers or low incomes. Similarly, Grech (2015) emphasizes that these groups have been most negatively affected by recent pension reforms. Moreover, rising life expectancy may increase poverty through other channels than pension adequacy, for example older women living alone after widowhood and individuals with long-term care needs are particularly exposed to economic vulnerability, due to rising costs for care and reduced opportunities for household resource sharing (Ahonen & Kuivalainen, 2024; Härtull & Nygård, 2024; Anderson & Weaver, 2025).

At the same time, the consequences of demographic ageing are unlikely to be uniform across European countries. Comparative studies show differences in old-age poverty and social exclusion across welfare regimes. Nordic countries generally display lower levels of economic vulnerability among older individuals, whereas Southern European and post-socialist countries tend to face higher risks of exclusion (Ogg, 2005; Nyqvist et al., 2019; van der Linden et al., 2020). These differences have been linked to variation in pension system design, the role of minimum pensions and income guarantees, the availability of complementary support measures, and the extent to which economic security in old age depends on individual employment histories (van der Linden et al., 2020; Ebbinghaus, 2021; Anderson & Weaver, 2025).

Another age group facing increasing poverty risks is composed of persons in their 50s or early 60s who are not yet eligible for pensions. Pension system reforms have raised the average retirement age, making this group more dependent on the labour market (Hess, 2017; Kuitto & Helmdag, 2021). Ongoing transformations driven by technological progress, especially in ICT and artificial intelligence,

and by the expansion of online commerce disproportionately impact older individuals with lower educational attainment and declining health (Dachs, 2018; Ramaswamy, 2018; Yashiro et al., 2022). A further risk factor for this group is the increased rate of family separation (Gray et al., 2011).

These demographic transformations have important implications for welfare systems, as the needs, resources and appropriate policy responses for an ageing poor population inevitably differ from those required by younger groups. Our aim is not to study the characteristics and the determinants of poverty among the elderly, but to address two interrelated research questions: i) To what extent has the age composition of poverty changed in Europe over the last two decades? ii) How much of this change can be attributed to demographic ageing rather than to shifts in within-group poverty rates?

The existing literature has examined the determinants of poverty across different stages of the life course as well as the role of welfare institutions in mitigating poverty risks among different social groups (Ogg, 2005; Tai & Treas, 2009; Andriopoulou & Tsakloglou, 2016; Hammer et al., 2022; Ilmakunnas, 2022; Ahonen & Kuivalainen, 2024; Härtull & Nygård, 2024; Caminada et al., 2025; Anderson & Weaver, 2025; Szczepaniak et al., 2026). However, to the best of our knowledge, much less attention has been devoted to the age composition of the poor population. Yet, in the presence of profound demographic changes, trends in poverty rates and changes in the composition of the poor may follow different paths. The main contribution of this paper is to address this issue by distinguishing the extent to which these changes are driven by demographic ageing rather than by changes in poverty within different age groups.

To address these questions, we rely on cross-sectional microdata from the European Union Statistics on Income and Living Conditions (EU-SILC) released by Eurostat for the years 2005–2024. This dataset provides harmonized information on income, labour, demographic and socio-economic characteristics at both the individual and household levels, allowing for cross-country and over-time comparisons. Poverty is defined using the standard relative threshold of 60% of national median equivalized disposable income. We distinguish five age groups (0–17, 18–34, 35–49, 50–64 and 65+), and combine the construction of age-specific poverty profiles with a decomposition of overall changes in poverty into two components: a "demographic effect," capturing the role of shifts in population structure, and a "poverty effect," capturing variations in within-group poverty rates.

The rest of the paper is organized as follows. Section 2 describes the methodology. Section 3 employs microdata from EU-SILC to document the extent to which the poor are ageing in EU countries and presents for each country the decomposition of changes in age-group contributions to poverty into a poverty effect and a demographic effect. Section 4 discusses the main findings and their implications.

2. Methodology

In this paper poverty is measured by the Foster-Greer-Thorbecke (1984, FGT) index of poverty, given by $FGT(\alpha) = \frac{1}{N} \sum_{i=1}^N g_i^\alpha$, where $g_i = \max\left\{\frac{z-y_i}{z}, 0\right\}$ is the poverty gap for individual i with equivalent disposable income y_i , and z is the poverty line. For $\alpha = 0$ the index reduces to the headcount ratio; for $\alpha = 1$ it equals the mean normalised poverty gap; when $\alpha = 2$ it incorporates both the depth and the

inequality of poverty among the poor, assigning greater weight to those furthest below the poverty line. Throughout this paper we use $\alpha = 2$, so that index is sensitive to the distribution of income within the poor population of each group, a property that the headcount ratio lacks.

Now partition the population into G mutually exclusive and exhaustive subgroups, indexed $g = 1, \dots, G$, with N_g individuals each. The FGT index is additively decomposable by subgroups:

$FGT(\alpha) = \sum_{g=1}^G \frac{N_g}{N} FGT_g(\alpha)$, where $FGT_g(\alpha) = \frac{1}{N_g} \sum_{i \in g} g_i^\alpha$ is the within-group FGT index. This property holds for all $\alpha \geq 0$ and is the foundation on which the analysis in this paper rests.

The contribution of group g to aggregate poverty is:

$$C_g = \frac{N_g}{N} FGT_g$$

where we suppress the α argument for convenience. It sums to FGT across all groups: $\sum_{g=1}^G C_g = FGT$, which follows directly from the subgroup decomposability of the FGT index.

It is useful to write C_g as the product of two terms:

$$C_g = s_g r_g$$

where $s_g = \frac{N_g}{N}$ is the population share of group g and r_g is the within-group poverty index. The first term captures the demographic weight of the group; the second captures the intensity of poverty within it. A group can have a large contribution either because it is demographically large (s_g high) or because its members are very poor, or both.

Decomposing changes in the contribution

Consider two periods, $t = 0$ and $t = 1$. The observed change in the contribution of group g to total poverty is:

$$\Delta C_g = C_g^1 - C_g^0 = s_g^1 r_g^1 - s_g^0 r_g^0$$

We wish to decompose ΔC_g into a poverty effect — the contribution of changes in r_g , reflecting changes in the within-group poverty index relative to the aggregate — and a population effect — the contribution of changes in s_g , reflecting changes in the group's demographic weight.

The natural starting point is a simple counterfactual decomposition. Holding s_g constant at its period-0 value and allowing only r_g to change gives a poverty effect of $s_g^0 \Delta r_g$; holding r_g constant and allowing only s_g to change gives a population effect of $r_g^0 \Delta s_g$. The sum of these two terms, however, is equal to ΔC_g only if the interaction term $\Delta s_g * \Delta r_g$ is zero or assigned to one of the components. The choice of reference period — period 0 or period 1 — for the counterfactual yields' different decompositions, a standard index number problem.

Alternatively, one could hold s_g at its period-1 value, giving a poverty effect of $s_g^1 \Delta r_g$ and a population effect of $r_g^1 \Delta s_g$. The two decompositions are equally arbitrary, and in general yield different numerical results.

The Shapley value solution

Following Shorrocks (2013), the path-dependency problem can be solved by applying the Shapley value from cooperative game theory. The Shapley value assigns to each factor a contribution equal to its average marginal effect across all possible orderings in which the factors are introduced. With two factors — the poverty effect and the population effect — there are two possible orderings, and the Shapley value assigns to each factor the average of its marginal contribution under the two orderings.

Formally, define the value function $v(S)$ for a subset S of the two factors s_g, r_g as the value of C_g when the factors in S take their period-1 values and the factors not in S take their period-0 values:

$$v(\emptyset) = s_g^0 r_g^0 = C_g^0$$

$$v(s_g) = s_g^1 r_g^0$$

$$v(r_g) = s_g^0 r_g^1$$

$$v(s_g, r_g) = s_g^1 r_g^1 = C_g^1$$

The Shapley value assigns to the population effect:

$$\phi(s_g) = \frac{1}{2} \cdot [v(s_g) - v(\emptyset)] + \frac{1}{2} \cdot [v(s_g, r_g) - v(r_g)] = \frac{1}{2} \cdot (s_g^1 - s_g^0) \cdot r_g^0 + \frac{1}{2} \cdot (s_g^1 - s_g^0) \cdot r_g^1 = \frac{1}{2} \cdot \Delta s_g \cdot (r_g^0 + r_g^1)$$

And to the poverty effect:

$$\phi(r_g) = \frac{1}{2} \cdot [v(r_g) - v(\emptyset)] + \frac{1}{2} \cdot [v(s_g, r_g) - v(s_g)] = \frac{1}{2} \cdot (r_g^1 - r_g^0) \cdot s_g^0 + \frac{1}{2} \cdot (r_g^1 - r_g^0) \cdot s_g^1 = \frac{1}{2} \cdot \Delta r_g \cdot (s_g^0 + s_g^1)$$

It is straightforward to verify that the decomposition is exact:

$$\Delta C_g = \phi(s_g) + \phi(r_g) = \frac{1}{2} \cdot \Delta s_g \cdot (r_g^0 + r_g^1) + \frac{1}{2} \cdot \Delta r_g \cdot (s_g^0 + s_g^1) = s_g^1 \cdot r_g^1 - s_g^0 \cdot r_g^0$$

The Shapley decomposition has three properties that make it the preferred solution to the index number problem. It is exact: the two components sum exactly to the total observed change with no residual. It is symmetric: each factor is treated identically, with no a priori assignment of the interaction term to one component or the other. And it is unique: among all decompositions satisfying a set of natural axioms — including efficiency, symmetry, and a dummy axiom requiring that a factor with no effect receives zero attribution — the Shapley value is the only solution.

The *population effect* $\phi(s_g)$ measures the change in group g 's absolute contribution that would have occurred if the within-group's poverty index r_g had remained at the average of its period-0 and period-1 values, and only the population share had changed. A positive population effect means that the group's demographic weight has grown — it represents a larger fraction of the total population — which, holding its poverty constant, mechanically increases the group's contribution to aggregate poverty. This effect is independent of any change in the economic conditions of the group: it reflects a purely demographic change.

The *poverty effect* $\phi(r_g)$ measures the change in group g 's absolute contribution attributable to changes in the group's poverty index FGT_g . A positive poverty effect means that within-group poverty has worsened, ceteris paribus.

The sign and magnitude of the two effects together characterise the nature of the change in each group's contribution and its policy implications. For example, a positive population effect with a negative or constant poverty effect indicates that demographic expansion is driving the growing contribution of the group to total poverty even as its relative poverty conditions improve or do not change.

Aristondo and Onaindia (2020) use the same framework to decompose changes in the aggregate FGT(2) into incidence, intensity and inequality components for European countries. Our application is methodologically parallel but substantively orthogonal: exploiting the additive subgroup decomposability of the FGT family, we partition aggregate poverty by age group and decompose each group's contribution to the change in the aggregate index into a poverty effect and a population effect, asking how much of the shift in the age profile of poverty reflects deteriorating economic conditions within older cohorts and how much is the mechanical consequence of demographic ageing.

3. Data and results: the impact of ageing on the poverty profile of Europeans

For our analysis we use the cross-sectional version of the European Union Statistics on Income and Living Conditions (EU-SILC) dataset - released by Eurostat - for the years 2012-2024. We focus on the most recent decade, covering the recovery phase that followed the full impact of the 2008 financial crisis on European households. The EU-SILC data are available from 2005 onwards, but our choice of period is motivated by three considerations. First, it avoids conflating long-run demographic changes with the exceptional effects of the global financial crisis and the subsequent sovereign debt crisis, allowing us to focus on structural changes in the age profile of poverty. Second, it exploits a period for which EU-SILC provides a stable and consistent country coverage across the 22 countries included in the analysis. Third, the decade after 2012 coincides with the period in which population ageing became an increasingly important demographic force across Europe, making it particularly suitable for assessing the respective roles of demographic change and within-group poverty dynamics.

EU-SILC provides detailed micro-data on income, labour, demographic and socio-economic characteristics at both individual and household levels. We have used the data of the countries with a continuous presence in the dataset from 2012 onwards.² For each country and year, the relative poverty line is set at 60% of national median disposable income, equivalized using the OECD modified scale. We distinguish five age classes: 0-17, 18-34, 35-49, 50-64, ≥ 65 . To increase the robustness of the results and reduce the effects of year-specific fluctuations, we compare statistics computed on pooled data for the years 2012–14 with those computed on pooled data for the years 2022–24.

To illustrate the impact of population ageing on poverty, we rely on a widely used tool, the poverty profile (Kakwani & Son, 2005; Haughton & Khandker, 2009). It basically consists of two main statistics: the poverty rate and the composition of the poor, both distinguished by a socio-demographic

² The 22 countries included in the analysis are: Austria (AT), Belgium (BE), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), Finland (FI), France (FR), Ireland (IE), Italy (IT), Lithuania (LT), Luxembourg (LU), Latvia (LV), Netherlands (NL), Poland (PL), Portugal (PT), Sweden (SE), Slovenia (SI) and Slovakia (SK).

dimension of interest, which in our case is the distribution of the population by age. Examining a poverty profile allows, for example, to identify cases where a demographic group of small size may have a high incidence of poverty and, conversely, groups which, despite not having a particularly high poverty rate, may contain a significant proportion of the total number of the poor because of their size.

Table 1 presents the European poverty profile based on the FGT index, reporting unweighted country averages for two endpoint periods, 2012–14 and 2022–24. In the left panel, for each age class there is the unweighted country average of the within-group FGT rates at the beginning and end of the period. The poverty rate on average fell for all age groups except the oldest: the reductions are largest for children and young adults and smallest for the 50–64 group, while the ≥ 65 group is the only one to record an increase.

The right panel contains for each age group the unweighted country average of its contribution C_g to the total index, i.e. the ratio between the sum of the squared poverty gaps of that class divided by the total sum of squared poverty gaps of the country. The compositional picture reinforces this message: the contribution of the oldest age group to the aggregate index rises from 10% to 17%, while the shares of the three younger groups decline. The 18–34 group experiences the largest reduction in its compositional weight (–5 percentage points).

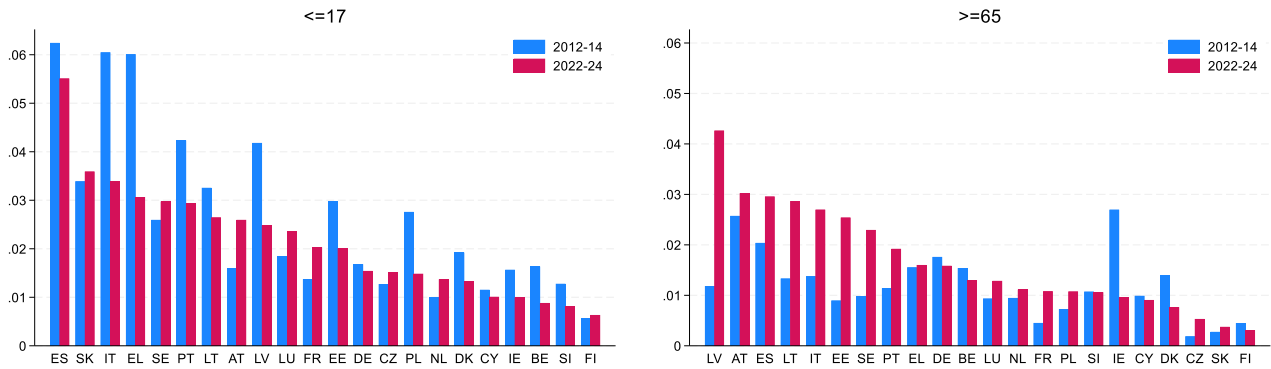
Tab. 1. Poverty profile for the FGT index by age class in 22 European countries, 2012-14 vs 2022-24

Age	$FGT_g = \frac{1}{N_g} \sum_{i \in g} g_i^2$			$\frac{\sum_{i \in g} g_i^2}{\sum_{i=1}^N g_i^2}$		
	2012-14	2022-24	Var.	2012-14	2022-24	Var.
0-17	0.027	0.021	-0.005	20%	19%	-1%
18-34	0.029	0.024	-0.005	29%	24%	-5%
35-49	0.023	0.019	-0.004	21%	19%	-2%
50-64	0.024	0.022	-0.001	21%	22%	1%
≥ 65	0.012	0.017	0.005	10%	17%	7%
Total	0.023	0.021	-0.002	100%	100%	0%

Source: Elaborations of the authors on EU-SILC data

To provide a clearer understanding of the changes that have occurred, Figure 1 presents, for the youngest and oldest age groups, the within-group poverty index for each country in the sample at the beginning and at the end of the period. Countries are ordered according to decreasing values of the index in the final period.

Fig. 1. FGT poverty index for children and older adults across countries: 2012–14 and 2022–24



Source: Elaborations of the authors on EU-SILC data

For those aged under 17, the FGT index increased in 8 out of 22 countries over the past decade and declined in the remaining 14; for those aged 65 and over, the pattern is precisely reversed — the index increased in 14 countries and declined in 8.

The left panel of Fig. 1 says that child poverty, measured by the depth and severity of deprivation, has improved in many countries, especially in Spain, Italy, Greece, Portugal, the Baltic countries and Poland, while significant increases in the within-group FGT index are present in Sweden, Austria, Luxembourg, France, Czech Republic and the Netherlands. The ≥ 65 panel presents a different picture: in most countries the 2022–24 bars exceed the 2012–14 ones, and the increase is particularly pronounced in Latvia, Austria, Spain, Italy, Greece, Sweden, Portugal and Lithuania. Only a handful of countries — Germany, Belgium, Cyprus, Ireland, Denmark and Finland — show an improvement for the elderly over the period. Despite this deterioration, the within-group FGT index for the elderly remains, on average, lower than that of younger age groups, as shown in Table 1; however, the gap with the rest of the population has narrowed considerably. In the last part of the examined period the FGT rate for the over 65 is greater than or not significantly different from that of the 0–17 class in 9 countries out of 22. A decade before this was true in 5 countries.

Decomposition of the changes in the poverty profile by age groups

Tab. 1 has shown that the contribution of the elderly to total poverty has on average increased in EU countries, while that of those under 18 years of age has decreased. These changes in the contribution of different age classes to total poverty have been associated to movements in the within-groups poverty rates, but so far we cannot ascertain the role that the ageing process has had.

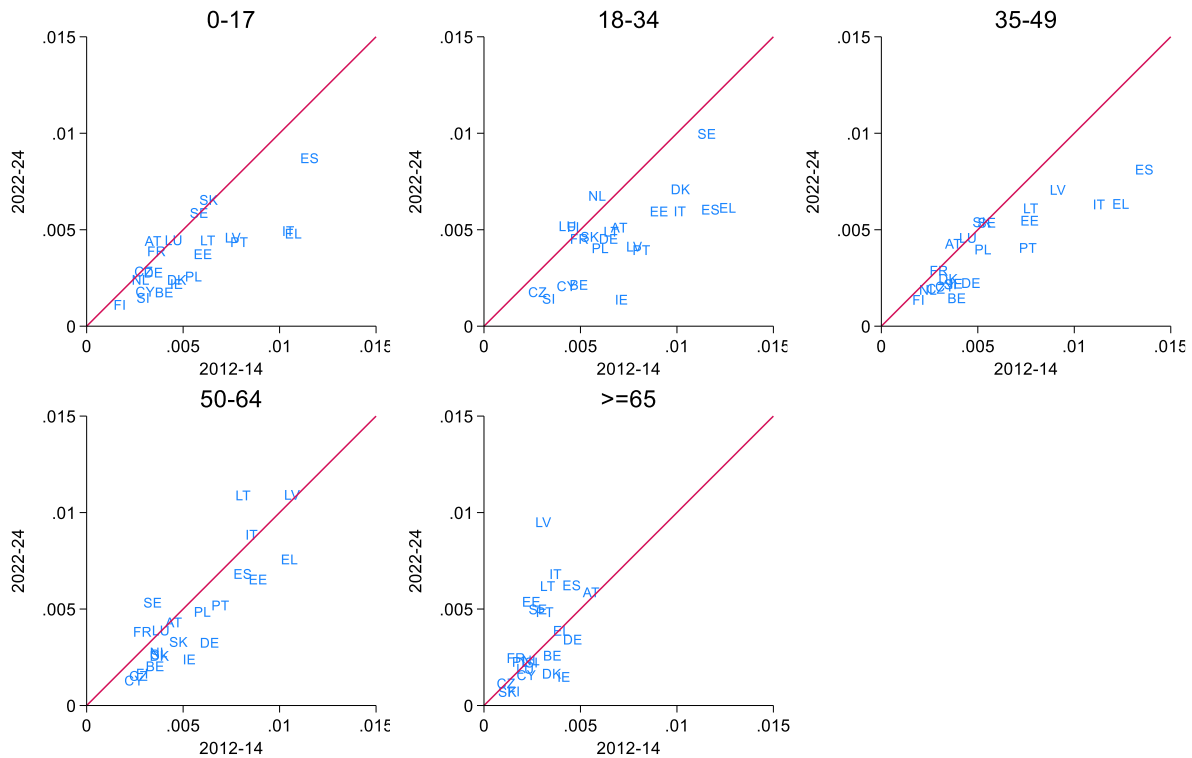
We now turn to a decomposition of the change over time ΔC_g of the contribution of each age class to total poverty into two terms:

- a poverty effect $\phi(r_g)$, capturing the change in the within-group poverty rate;
- a population effect $\phi(s_g)$, capturing the change in the relative dimension of the group in the total population.

For each country and age class, first we show the value of C_g at the beginning and at the end of the observed period, then the decomposition of its change into the two effects. Figure 2 plots, for each country, the contribution C_g of each age group to aggregate FGT in 2022–24 against its value in 2012–14, so that points above the diagonal indicate an increase and points below a decrease. For each country and period, the sum of the values of the five age groups is equal to FGT.

For the three younger age classes — 0–17, 18–34, and 35–49 — the majority of countries lie below or close to the diagonal, indicating stable or declining contributions. The contribution of the youngest age group declined in 13 countries, most notably in Poland, Italy, the Baltic states, Greece, Spain and Portugal, and increased in 9 countries, among them in Austria, France, Slovak Rep. and Sweden. The 18–34 panel shows declines for 18 countries, the only exceptions being the Netherlands, Luxembourg, Finland and France. A similar story applies to the 35–49 class, where the greatest declines are registered in the Southern countries. For the 50–64 group the contribution falls in 15 countries, in particular in Greece, Germany, Ireland, Estonia and Portugal, while it increases in Lithuania, Latvia, Italy, France and Sweden. The ≥ 65 panel presents the sharpest contrast: most countries lie above the diagonal, indicating that the contribution of older adults to aggregate poverty has generally increased. The largest positive changes increase in the contribution of older adults are observed in the Baltic countries, as well as in Portugal, Italy, Spain, France and Poland. By contrast, the relative contribution of the oldest age group declined in Ireland, Denmark, Germany, Finland and Belgium.

Fig. 2. Contribution $C_g = \frac{N_g}{N} FGT_g$ of each age class to the FGT index by country in 2012–14 and in 2022–24

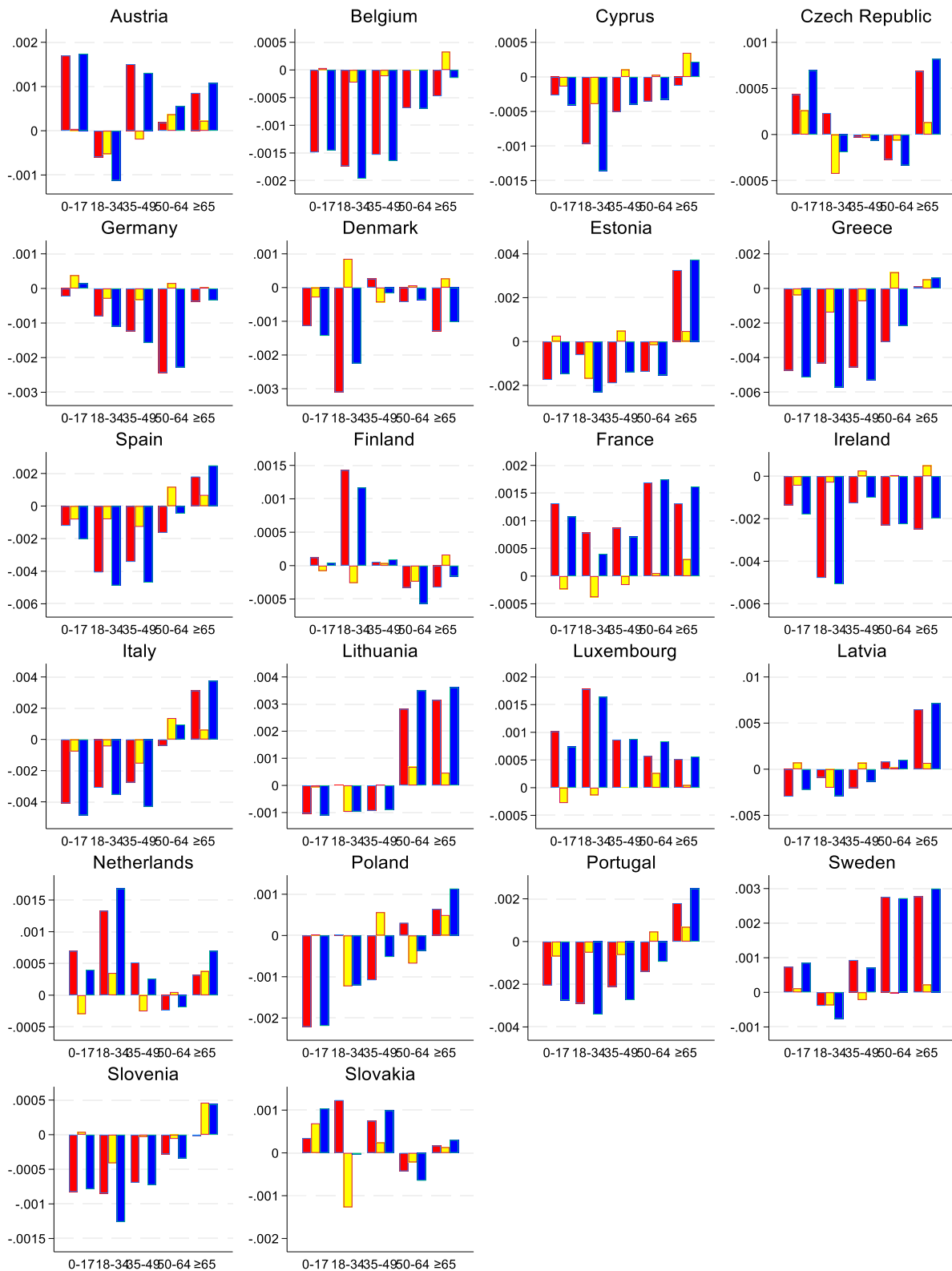


Source: Elaborations of the authors on EU-SILC data

So far, we have seen how the contribution of each age class to total poverty has changed over time. Now we decompose this variation ΔC_g into a poverty ($\phi(r_g)$) and a population ($\phi(s_g)$) effect for each

country and age class (Fig. 3). Each red bar is the change in the contribution of the class due to the poverty effect, and each yellow bar shows the change in contribution of the class due to the population effect. The blue bar is the sum of the previous two, i.e. the total change in the contribution of the class. A positive blue bar for a given age group indicates that its contribution to aggregate poverty has increased over the period, and vice versa. For each country the sum of the blue bars across all age groups equals the total change in the aggregate FGT index between 2012–14 and 2022–24. This additive consistency is a key advantage of the absolute decomposition: it allows the contribution of each age group to be read directly as a share of the overall change in aggregate poverty. As a robustness check, we repeated the analysis using the FGT(0) index instead of the FGT(2) index and obtained qualitatively similar results.

Fig. 3 - Decomposition into a poverty and a population effect of the change (2012-14 vs 2022-24) in the contribution of each age class to the FGT index.



Note: Red: poverty effect. Yellow: population effect. Blue: Red + Yellow.

Source: Elaborations of the authors on EU-SILC data

Taking Italy as an example, for the three younger groups both effects are negative, producing an overall decline in their contribution to aggregate poverty. For the 50–64 group, the poverty effect is slightly negative but the population one is positive and greater, resulting in a positive change, i.e. the overall FGT would have increased if the only changes in poverty and population size regarded this age class. For the ≥ 65 group, the poverty effect is high and positive, while the population effect is positive but low. The poverty effect indicates a worsening of within-group conditions, while the population effect reflects the growing demographic weight of older adults. The combined result is a large positive blue bar, indicating that the ≥ 65 group has substantially increased its contribution to aggregate poverty over the decade, primarily driven by deteriorating poverty conditions and to a smaller extent by demographic expansion.

The red bars (poverty effect) are positive in a minority of countries for the first age classes, while they are positive in 15 cases for the elderly. The population effect, on the other hand, is positive in 10 countries for the 0-17 class, in 9 for the 35-49 group, in only 2 cases for the 18-34 group, in 14 countries for the 50-64 group and always for the elderly, confirming the pervasive impact of demographic ageing throughout Europe.

Switching to the total contribution to the change of poverty by age class, the four younger groups have a positive one in 9 (0-17), 4 (18-34), 7 (35-49 and 50-64) countries, while the contribution is positive in 17 cases for the elderly. Focusing on the unweighted average amounts of these contributions among countries, individuals below the age of 65 made a negative contribution to the change in aggregate poverty, while the older age group contributed positively. The strongest negative contribution is observed among young adults aged 18–34. This decline reflects both a shrinking demographic weight and, in many countries, an improvement in their within-group poverty conditions.

For children aged 0–17, no clear European pattern can be identified. In some countries, including Italy, Belgium, Portugal, Poland, the contribution of children to aggregate poverty declines substantially. In others, such as Austria, the Czech Republic and the Netherlands, it increases. The decomposition shows that these divergent outcomes arise from different combinations of poverty and demographic effects. Poverty among children increases significantly in Austria, France, the Netherlands, while it decreases in particular in Belgium, Italy, Poland and Slovenia. The population effect is often small and negative, but there are some positive signs, i.e. in the Czech Republic, Germany and Slovakia.

A more regular pattern emerges for young adults aged 18–34. In 18 countries their contribution to aggregate poverty declines. This reduction is driven mainly by the population effect, as the demographic weight of younger cohorts has fallen over time. Changes in within-group poverty are much more heterogeneous, but most countries register a fall. Thus, the declining contribution of young adults to overall poverty reflects both their demographic contraction and an improvement in their economic conditions. Similar considerations apply to individuals aged 35–49, who show in most countries a decline in their contribution to aggregate poverty, driven by both the population and the poverty effect.

The pattern changes for individuals aged 50–64. In many countries, this age group records a positive contribution to the overall change in poverty. In Southern Europe and several Eastern European countries, the increase is driven primarily by worsening poverty outcomes within the group, although demographic factors also contribute.

The differences observed between Southern European and Eastern European countries appear to be at least partly consistent with the characteristics of their welfare systems. Individuals aged 50–64 do not yet benefit from the protection provided by old-age pension schemes and therefore remain more dependent on labour market participation and income-support measures. In contexts where labour market policies and social protection systems are less developed or more fragmented, the risk of economic vulnerability tends to be greater (Figari et al., 2011; Andreotti & Mingione, 2016; Hassel & Palier, 2023). By contrast, Scandinavian welfare states and, to a lesser extent, continental regimes generally provide more effective protection against labour market difficulties through income transfers, active labour market policies and broader social protection mechanisms (Figari et al., 2011).

In all countries the demographic effect for the older group is positive, but also its poverty effect is positive in 15 cases out of 22. The increasing contribution of the elderly to the overall poverty rate is therefore driven by both effects. The poverty effect, further, is for the elderly on average of greater magnitude than the population one.

Cross-country heterogeneity nevertheless emerges. In some cases, both the poverty and population effects are positive for the over65. In these countries, the increasing contribution of the elderly reflects the combined impact of demographic ageing and a deterioration in the relative economic position of older individuals.

By contrast, other countries display a different pattern. In Germany, Finland, Belgium and Denmark, although population ageing tends to increase the demographic weight of the elderly and therefore their contribution to aggregate poverty, this effect is partially or completely offset by declining poverty risks among older individuals. These findings show that an increase in the absolute contribution of the elderly to aggregate poverty is not an automatic consequence of demographic ageing. Whether and to what extent it materialises depends on the capacity of pension systems and social protection institutions to contain within-group poverty among older cohorts. The decomposition makes this distinction empirically tractable: a positive population effect with a small or negative poverty effect signals a system that successfully has shielded the elderly from poverty even as their demographic weight has grown.

Part of the cross-country heterogeneity appears consistent with the characteristics of different European welfare regimes and pension systems. Looking at the Scandinavian model, in both Denmark and Finland, the demographic effect is positive, while the poverty effect is close to zero or negative. This pattern is consistent with the presence of universal or guaranteed pensions, extensive income-support measures, and well-developed social care systems that reduce dependence on labour-market earnings accumulated during working life (Nygqvist et al., 2019; MISSOC, 2025). Sweden represents instead a notable exception.

The post-socialist countries also exhibit a pattern in line with previous expectations. In Estonia, Latvia, Lithuania and the Czech Republic the poverty effect among older individuals is positive and contributes to the growing share of the elderly in aggregate poverty. These systems tend to rely more heavily on individual contribution histories, while minimum pensions, income guarantees and complementary support measures are generally less developed which also leads to the persistence of inequalities accumulated over the course of a person's life (van der Linden et al., 2020; Ebbinghaus, 2021).

The Mediterranean countries present another interesting case. Italy, Spain and Portugal all display a positive poverty effect among the elderly, despite pension systems that remain relatively protective by European standards in terms of expenditure and benefit generosity. These results suggest that generous pension expenditure does not automatically translate into lower poverty risks among older individuals. Compared with the Nordic countries, Mediterranean welfare systems provide a less extensive set of complementary income-support measures, housing assistance and care services (MISSOC, 2025), while continuing to rely heavily on family networks as a source of protection and support (Ogg, 2005; Nyqvist et al., 2019).

The continental countries constitute the most heterogeneous group. France and Austria display a pattern like that observed in the Mediterranean countries, with positive poverty effects among older individuals, whereas Germany exhibits a profile closer to the Nordic model, with a negative poverty effect. This heterogeneity is consistent with the nature of Bismarckian welfare systems, which tend to reduce poverty through relatively generous pensions and minimum protection schemes, while at the same time maintaining a strong link between retirement income and previous labour-market careers. As noted by Ebbinghaus (2021), these systems are generally effective in limiting severe poverty but less successful in offsetting inequalities accumulated during working life.

4. Discussion and Conclusions

This paper has proposed a perspective on poverty that complements conventional indicators by focusing on the age composition of the poor. While standard measures provide information on the incidence and intensity of poverty within specific demographic groups, they are less informative about how demographic change reshapes the overall profile of poverty. As a result, important transformations may remain hidden even when age-specific poverty rates appear relatively stable. By combining age-specific poverty profiles with a Shapley decomposition of changes in group contributions to aggregate poverty, we have shown that the ageing of poverty is already underway across much of Europe.

The central finding is that the growing presence of older individuals among the poor in European countries over the last decade cannot be understood as a purely demographic phenomenon. Population ageing undoubtedly increases the demographic weight of older cohorts and therefore their contribution to aggregate poverty. However, in many countries demographic change explains only part of the observed shift. An equally important role is played by changes in poverty conditions within older age groups themselves. In several countries, the increasing contribution of the elderly to aggregate poverty reflects not only the fact that there are more older people, but also that older individuals are becoming relatively more exposed to economic vulnerability. The ageing of poverty is therefore not merely a future concern associated with demographic projections; it is an ongoing process already visible in contemporary European societies.

At the same time, the results reveal substantial heterogeneity across countries. In some cases, demographic ageing and worsening outcomes among older individuals reinforce each other, producing an increase in the contribution of the elderly to aggregate poverty. In others, improvements in the economic position of older people partly offset the demographic effect. These differences

suggest that population ageing does not mechanically translate into a larger poverty burden among older cohorts. Rather, the consequences of demographic change appear to depend, at least in part, on the capacity of pension systems and broader social protection institutions to maintain adequate living standards in later life.

This finding has implications that extend beyond the study of poverty itself. Over the last two decades, welfare-state debates have increasingly been framed around the emergence of “new social risks” associated with labour-market instability, family change, and the transition to post-industrial economies. In this perspective, social vulnerability has often been seen as increasingly concentrated among younger generations, while old-age poverty has frequently been regarded as a less pressing concern in mature welfare states. The evidence presented here suggests a more complex picture. While poverty among children, young adults and precarious workers remains a central concern, old-age poverty may be becoming a more significant source of vulnerability than is often assumed in contemporary welfare-state debates. Our findings therefore invite a reconsideration of the relationship between “old” and “new” social risks in ageing societies.

The results also speak to the debate on social investment. Since the early 2000s, influential contributions have argued that welfare states should progressively reorient resources towards policies that strengthen human capital, labour-market participation and opportunities for younger generations. This reorientation has generated important benefits and remains essential. Yet it has often been accompanied, implicitly or explicitly, by the assumption that income protection in old age had largely achieved its objectives and could therefore become a less central concern. The evidence presented here suggests that such an assumption may not hold uniformly across European countries. In a growing number of cases, the contribution of older individuals to aggregate poverty is increasing not only because societies are ageing, but also because poverty risks among older cohorts are becoming more prominent. The findings are therefore consistent with the view that the challenge facing European welfare states may be less one of choosing between social investment and social protection than of maintaining an appropriate balance between them. Our results do not challenge the importance of social investment policies. Rather, they suggest that the policy agenda of ageing societies cannot easily be organised around a simple reallocation from old-age protection towards younger generations. In several countries, the persistence—and in some cases the growing importance—of old-age poverty suggests that income protection in later life remains an important welfare-state function. The challenge facing European welfare states may therefore be less about choosing between investment and protection than about reconciling both objectives under conditions of demographic ageing and fiscal constraint.

More fundamentally, the results suggest that the evolution of poverty in ageing societies may be less accurately described as a shift from old social risks to new social risks than as an accumulation of vulnerabilities across different stages of the life course. Much of the literature of the last two decades has implicitly assumed that the reduction of old-age poverty allowed welfare states to redirect attention towards children, young adults and labour-market outsiders. Our findings indicate that this narrative may be overly linear. In several countries, poverty among younger generations remains a major concern, but this occurs alongside—not instead of—a growing contribution of older individuals

to aggregate poverty. Rather than replacing one another, old and new social risks increasingly coexist. This coexistence may create new pressures for welfare states, since policies designed to address vulnerabilities at one stage of the life course cannot automatically compensate for vulnerabilities emerging at another.

An important implication of our decomposition is that demographic ageing alone provides only a partial explanation of the observed transformation. In many countries, the poverty effect exceeds the demographic effect in magnitude. This finding shifts attention from the consequences of ageing per se to the economic conditions experienced by older cohorts. If the increasing contribution of older individuals to aggregate poverty were driven primarily by demographic change, policy responses would mainly concern adaptation to changing population structures. However, where worsening poverty outcomes account for a substantial share of the observed increase, the issue may also concern income adequacy, labour-market trajectories, and social protection. The challenge is therefore not simply that European societies are ageing, but that ageing may increasingly be occurring under conditions of economic vulnerability for part of the older population.

More generally, our findings raise questions about the evolution of intergenerational redistribution in ageing welfare states. Much of the recent literature has focused on whether public resources should be shifted from pensions towards programmes benefiting younger generations. While this debate remains important, our results suggest that such a reallocation cannot automatically be justified on the premise that poverty among older people has been permanently resolved. In several countries, maintaining adequate protection against poverty in old age continues to represent a central policy objective. The issue may become even more salient as successive cohorts retire with increasingly fragmented employment histories, more discontinuous contribution records, and greater exposure to labour-market risks over the life course.

Taken together, the evidence presented in this paper points towards a broader conclusion. Population ageing is often discussed primarily as a challenge for public finances, pension sustainability, health care and long-term care systems. Our results suggest that it may also be understood as a challenge for the social distribution of poverty. The ageing of European societies appears to be accompanied by a transformation in the age profile of economic disadvantage, one that is already visible in many countries and that cannot be reduced to demographic change alone. As Europe grows older, the key question may no longer be whether poverty is becoming an issue for older people, but how rapidly the age profile of poverty is changing and whether welfare states are adapting sufficiently quickly to this transformation.

Like any analytical approach, this study has limitations. First, the analysis does not aim to identify the causal determinants underlying the observed changes. Second, the analysis focuses exclusively on income poverty and therefore does not capture other dimensions of disadvantage that are especially relevant in later life, including health limitations, housing insecurity and social exclusion. The inclusion of these dimensions could potentially alter the age profile of vulnerability identified in this paper. While older individuals are often less exposed to income poverty than younger groups, they may face higher risks of deprivation in other domains, particularly those related to health, care needs and social participation. As a result, a multidimensional perspective might reveal an even stronger concentration

of disadvantage among older age groups. Future research could extend the framework proposed here to multidimensional measures of deprivation and investigate more systematically the role of pension systems, labour-market institutions and welfare-state arrangements in shaping the changing age profile of poverty across European countries.

Data availability statement

The data utilized in this analysis are not publicly accessible; however, requests for access can be made to the data owner, Eurostat.

Declaration of interest

The usual caveat applies: The views expressed here are those of the author and do not reflect those of the institution with which the author is affiliated. I have nothing to declare.

Funding sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Generative AI and AI-Assisted Technologies in the Writing Process

The authors wrote the text themselves and subsequently used AI tools to correct the English and improve its fluency.

References

- Ahonen, K., & Kuivalainen, S. (2024). Gender differences in old-age poverty in 14 EU countries: Exploring the role of household structure. *International Review of Economics*, 71(4), 615–631.
- Anderson, K. M., & Weaver, R. K. (2025). Pensions, policy drift and old-age poverty in Western Europe and North America. *Journal of European Social Policy*, 35(3), 248–263.
- Andreotti, A., & Mingione, E. (2016). Local welfare systems in Europe and the economic crisis. *European Urban and Regional Studies*, 23(3), 252–266.
- Andriopoulou, E., & Tsakloglou, P. (2016). Mobility into and out of poverty in Europe in the 1990s and the pre-crisis period: The role of income, demographic and labour market events. IZA Discussion Paper No. 9750. Institute for the Study of Labor (IZA).
- Andriopoulou, E., Karakitsios, A., & Tsakloglou, P. (2018). Inequality and poverty in Greece: Changes in times of crisis (pp. 23-54). Springer International Publishing.
- Antczak, R., & Zaidi, A. (2016). Risk of poverty among older people in EU countries. *CESifo DICE Report*, 14(1), 37-46.
- Aristondo, O., & Onaindia, E. (2020). On measuring the sources of changes in poverty using the Shapley method. *An application to Europe. Fuzzy Sets and Systems*, 383, 80-91.

- Ayllón, S. (2015). Youth poverty, employment, and leaving the parental home in Europe. *Review of Income and Wealth*, 61(4), 651-676.
- Caminada, K., Goudswaard, K., Liu, J., Wang, C., & Wang, J. (2025). Understanding and analyzing changes in poverty among the elderly across 16 European countries using decomposition approach. *Economic Modelling*, 151, 107175.
- Chan, L. S., & Chou, K. L. (2018). Poverty in old age: evidence from Hong Kong. *Ageing & Society*, 38(1), 37-55.
- Chen, T., Hallaert J. J., Pitt A., Qu H., Queyranne M., Rhee A., Shabunina A., Vandenbussche J., Yackovlev I. (2018). Inequality and poverty across generations in the European Union, IMF Staff discussion note n. 18/01.
- Dachs, B. (2018). The impact of new technologies on the labour market and the social economy. European Parliamentary Research Service.
- Dagdeviren, H., Donoghue, M., & Meier, L. (2017). The narratives of hardship: the new and the old poor in the aftermath of the 2008 crisis in Europe. *The Sociological Review*, 65(2), 369-385.
- Diris, R., Vandenbroucke, F., & Verbist, G. (2017). The impact of pensions, transfers and taxes on child poverty in Europe: the role of size, pro-poorness and child orientation. *Socio-Economic Review*, 15(4), 745-775.
- Dolls, M., Doorley, K., Paulus, A., Schneider, H., & Sommer, E. (2019). Demographic change and the European income distribution. *The Journal of Economic Inequality*, 17, 337-357.
- Ebbinghaus, B. (2021). Inequalities and poverty risks in old age across Europe: The double-edged income effect of pension systems. *Social Policy & Administration*, 55(3), 440-455.
- Esping-Andersen, G., Gallie, D., Hemerijck, A. and Myles, J. (2002). *Why We Need a New Welfare State*, Oxford University Press, Oxford.
- European Commission (2024a). Directorate-General for Employment, Social Affairs and Inclusion and Social Protection Committee (SPC). The 2024 pension adequacy report – Current and future income adequacy in old age in the EU. Volume I, Publications Office of the European Union. <https://data.europa.eu/doi/10.2767/909323>
- European Commission (2024b). Directorate-General for Economic and Financial Affairs. The 2024 Ageing Report – Economic & Budgetary Projections for the EU Member States (2022-2070), Publications Office of the European Union. doi:10.2765/022983
- Fabrizi, E., & Mussida, C. (2020). Assessing poverty persistence in households with children. *The Journal of Economic Inequality*, 18(4), 551-569.
- Ferrera, M. (2016). Impatient politics and social investment: The EU as ‘policy facilitator’. *Journal of European Public Policy*.
- Figari, F., Salvatori, A., & Sutherland, H. (2011). Economic downturn and stress testing European welfare systems. In H. Immervoll, A. Peichl, & K. Tatsiramos (Eds.), *Who loses in the downturn?*

Economic crisis, employment and income distribution (Vol. 32, pp. 257–286). Emerald Group Publishing.

Foster, J., Greer, J., & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica: journal of the econometric society*, 761-766.

Giarda, E., & Moroni, G. (2018). The degree of poverty persistence and the role of regional disparities in Italy in comparison with France, Spain and the UK. *Social Indicators Research*, 136(1), 163-202.

Gray, M., De Vaus, D., Qu, L., & Stanton, D. (2011). Divorce and the wellbeing of older Australians. *Ageing & Society*, 31(3), 475-498.

Grech, A. (2015). Evaluating the Possible Impact of Pension Reforms on Elderly Poverty in Europe. *Social Policy & Administration*, 49(1), 68-87.

Hassel, A., & Palier, B. (2023). Same trend, different paths: Growth and welfare regimes across time and space. *Annual Review of Political Science*, 26(1), 347–368.

Haughton J., Khandker S. R. (2009), *Handbook on poverty and inequality*, World Bank.

Hammer, B., Spitzer, S., & Prskawetz, A. (2022). Age-specific income trends in Europe: The role of employment, wages, and social transfers. *Social Indicators Research*, 162(2), 525–547.

Härtull, C., & Nygård, M. (2024). A problem of gendered injustice? Objective and subjective poverty among older women and men across European welfare regimes. *European Journal of Ageing*, 21(1), 3. <https://doi.org/10.1007/s10433-023-00796-5>

Hemerijck, A. (2017). *The Uses of Social Investment*. Oxford: Oxford University Press.

Hemerijck, A., & Plavgo, I. (2021). Measuring returns on social investment beyond here-and-now redistribution: A commentary on Parolin and Van Lancker's response article. *Journal of European Social Policy*, 31(3), 309–320.

Hess, M. (2017). Rising preferred retirement age in Europe: Are Europe's future pensioners adapting to pension system reforms?. *Journal of Aging & Social Policy*, 29(3), 245-261.

Hick, R. (2016). The coupling of disadvantages: material poverty and multiple deprivation in Europe before and after the Great Recession. *European Journal of Social Security*, 18(1), 2-29.

Hinrichs, K. (2021). Recent pension reforms in Europe: More challenges, new directions. An overview. *Social policy & administration*, 55(3), 409-422.

Hsieh, J. (2023). Population aging and wealth inequality. *Economic Change and Restructuring*, 56(6), 4223-4252.

- Ilmakunnas, I. (2022). The magnitude and direction of changes in age-specific at-risk-of-poverty rates: An analysis of patterns of poverty trends in Europe in the mid-2010s. *Journal of International and Comparative Social Policy*, 38(1), 71–91.
- Kakwani, N., & Son, H. (2005). Poverty analysis for policy use: Poverty profiles and mapping. In *Handbook of Poverty Statistics: Concepts, Methods and Policy Use* (pp. 292-369).
- Kuitto, K., & Helmdag, J. (2021). Extending working lives: How policies shape retirement and labour market participation of older workers. *Social Policy & Administration*, 55(3), 423-439.
- La Grange, A., & Lock, B. Y. (2002). Poverty and single elders in Hong Kong. *Ageing & Society*, 22(2), 233-257.
- MISSOC. (2025). Mutual Information System on Social Protection. <https://www.missoc.org/>
- Mussida, C., & Parisi, M. L. (2020). Risk of poverty in Southern Europe. *Metroeconomica*, 71(2), 294-315.
- Mussida, C., & Sciulli, D. (2022). The dynamics of poverty in Europe: what has changed after the great recession?. *The Journal of Economic Inequality*, 20(4), 915-937.
- Mussida, C., & Sciulli, D. (2023). Being poor and being NEET in Europe: Are these two sides of the same coin?. *The Journal of Economic Inequality*, 21(2), 463-482.
- Nyqvist, F., Nygård, M., & Scharf, T. (2019). Loneliness amongst older people in Europe: A comparative study of welfare regimes. *European Journal of Ageing*, 16(2), 133–143.
- OECD (2015), *In It Together: Why Less Inequality Benefits All*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264235120-en>
- OECD (2021), *Pensions at a Glance 2021: OECD and G20 Indicators*, OECD Publishing, Paris, <https://doi.org/10.1787/ca401ebd-en>.
- Ogg, J. (2005). Social exclusion and insecurity among older Europeans: the influence of welfare regimes. *Ageing & society*, 25(1), 69-90.
- Palomäki, L. M., Riekhoff, A. J., & Kuitto, K. (2024). What it means to be poor: dimensions of economic hardship among older people living in poverty across Europe. *Ageing & Society*, 1-22.
- Ramaswamy, K. V. (2018). Technological change, automation and employment: A short review of theory and evidence. *International Review of Business and Economics*, 2(2), 1.
- Shirahase, S. (2015). Income inequality among older people in rapidly aging Japan. *Research in Social Stratification and Mobility*, 41, 1-10.
- Shorrocks, A. F. (2013). Decomposition procedures for distributional analysis: a unified framework based on the Shapley value. *Journal of Economic Inequality*, 11(1), 99-126.
- Szczepaniak, M., Wędrowska, E., Muszyńska, J., & Markowski, G. (2026). Unequal by age and household type: Income inequality and demographic aging in Central and Eastern Europe. *Journal of Population Research*, 43(2).

- Tai, T.-o., & Treas, J. (2009). Does household composition explain welfare regime poverty risks for older adults and other household members? *The Journals of Gerontology: Series B*, 64B(6), 777–787.
- van der Linden, B. W. A., Sieber, S., Cheval, B., Orsholits, D., Guessous, I., Gabriel, R., von Arx, M., Kelly-
Irving, M., Aartsen, M., Blane, D., Boigontier, M. P., Courvoisier, D., Oris, M., Kliegel, M., & Cullati, S.
(2020). Life-course circumstances and frailty in old age within different European welfare regimes: A
longitudinal study with SHARE. *The Journals of Gerontology: Series B*, 75(6), 1326–1335.
- Von Weizsäcker, R. K. (1996). Distributive implications of an aging society. *European Economic Review*,
40(3-5), 729-746.
- Yashiro, N., Kyrrä, T., Hwang, H., & Tuomala, J. (2022). Technology, labour market institutions and
early retirement. *Economic Policy*, 37(112), 811-849.
- Zaidi, A. (2011). Exclusion from material resources among older people in EU countries: New evidence
on poverty and capability deprivation. *ECSWPR Policy Brief July (2)*, 1-17.