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**Extending working life: a challenge for health, the labour
market and inequality**

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Extending Working Life: A Challenge for Health, the Labour Market and Inequality

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Abstract

In response to rising life expectancy and growing concerns about the financial sustainability of public pension systems, many European countries have introduced reforms aimed at delaying retirement. While these reforms are justified on actuarial and fiscal grounds, they risk overlooking the unequal effects on different population groups. This paper focuses on the Italian case, drawing on both national and international empirical evidence to examine the health, labour market, and distributive consequences of increasing the retirement age. We show that such reforms can unintentionally worsen health outcomes, exacerbate socio-economic disparities, and increase welfare dependency and labour market exclusion, particularly among more vulnerable workers. They may also lead to regressive redistribution, benefiting higher-paid and longer-lived individuals. These effects are further shaped by gender, reflecting disparities in caregiving responsibilities and fragmented career paths. Finally, we discuss policy options that could reconcile fiscal sustainability with social equity and individual well-being.

Key words: Pension reforms; Retirement age; Ageing; Health inequalities; Vulnerable workers; Gender; Informal caring; Italy; Welfare and sustainability.

JEL Codes: H55; I14; J14; J26; J16.

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1. Introduction

In response to demographic ageing and rising fiscal pressures, Italy—like many other European countries—has enacted a series of pension reforms aimed at extending working lives and ensuring the long-term sustainability of its public pension system. Typically, these reforms involve introducing a notional defined contribution (NDC) scheme, raising the statutory retirement age, and increasing the contributions required to become eligible for benefits, to extend working lives and ensuring the long-term sustainability of the country's public pension system. This reflects a broader policy trend that emphasises actuarial fairness, individual responsibility, and financial sustainability.

However, the effects of such reforms are far from neutral, and their social and health impacts deserve careful examination. Increasing the retirement age for all in the same way assumes that everyone can and should work for longer. However, this approach overlooks the disparities in health, life expectancy, and work capacity across different social groups. Not all workers age in the same way, and not all jobs have the same impact on physical and mental health. An increasing body of research suggests that policies designed to delay retirement can have significant and unequal consequences for different social groups, affecting not only income security in old age, but also health outcomes, labour market participation and broader welfare dynamics. Those in physically demanding jobs, with lower levels of education or fragmented career paths, often find it more difficult to meet the new retirement eligibility criteria. For many, delayed retirement does not lead to longer employment, but rather to prolonged periods of unemployment, disability or economic inactivity. Moreover, these reforms interact with deeply rooted health and longevity inequalities. By applying uniform retirement rules to a highly heterogeneous population, current pension systems risk redistributing resources in a socially regressive way — penalising those with shorter lives and poorer health, while benefiting those who live longer and have more stable careers.

Italy is a particularly instructive case, having implemented a series of major pension reforms since the early 1990s. This long and sometimes contradictory sequence of reforms, labelled “A never-ending pension reform” already in 2002 (Franco, 2002), reflects the scale of the demographic and fiscal challenges, as well as the difficulty of balancing financial sustainability, intergenerational equity and the political sensitivity of unpopular social measures.

This paper explores the diverse consequences of delaying retirement in Italy, focusing on its broader implications for the labour market and various segments of the welfare state, as well as its health and distributional effects. Drawing on Italian and international literature, the paper aims to provide a non-systematic narrative overview that synthesises and contextualises existing evidence on the unintended effects of pension reforms on various outcomes and population subgroups. Particular attention is given to vulnerable workers, including manual workers, low-skilled workers, women, and those from economically disadvantaged backgrounds.

The remainder of the paper is organised as follows. Section 2 reviews the trajectory of pension reforms in Italy, emphasising the transition to the notional defined contribution (NDC) system. Section 3 examines the labour market spillovers and gendered implications of raising the retirement age. Section 4 discusses the health effects of delayed retirement, with particular attention to occupational differences in work capacity

at older ages. Section 5 analyses the redistributive effects associated with longevity inequality. Finally, Section 6 concludes and offers some policy recommendations.

2. The Italian institutional context

Italy has been a frontrunner in pension reform, largely due to concerns over demographic change and fiscal sustainability. The first wave of structural changes began in the early 1990s with the Amato Reform (Law 503/1992), in response to growing financial imbalances within the system.

Prior to this, the system was based on a generous defined benefit (DB) formula. Pension benefits were calculated as 2% of average earnings over the final five years of a worker's career, multiplied by the number of contribution years with a cap of 40 years. Workers could retire with either a seniority pension, available after 35 years of contributions regardless of age, or an old-age pension requiring 15 years of contributions and a minimum age of 55 for women and 60 for men. The system incorporated several redistributive elements, such as accrual floors and ceilings, as well as progressive accrual rates and inflation indexation mechanisms. Additionally, it did not adjust benefits according to the age at retirement. This set of rules resulted in a quite generous and mostly progressive DB scheme (Mazzaferro 2013), providing strong incentives for early retirement (Brugiavini and Peracchi, 2003)¹.

The first major reform, introduced by the Amato government in 1992 (Law 503/1992), aimed to address the growing imbalance between contributions and future liabilities, extend working lives, reduce excessive generosity for steeper wage profiles, which typically advantage those on higher salaries, and, in doing so, improve intergenerational equity (Leombruni and Mosca, 2016). The reform raised the minimum age for old-age pensions by five years (to 65 for men and 60 for women), increased the contribution requirement from 15 to 20 years, and expanded the period used to calculate pensionable earnings from five to up to 10 or 15 years, depending on employment status. While the reform began to make the system more sustainable and fairer between generations, the structure of the defined benefit (DB) scheme remained intact.

More structural reforms came with the Dini reform of 1995 (Law 335/1995), which introduced the notional defined contribution (NDC) system. This replaced the defined benefit (DB) formula with an actuarially inspired mechanism that links pension benefits directly to lifetime contributions. At retirement, these contributions are converted into an annuity using a transformation coefficient (or annuity factor) based on the average life expectancy at retirement.

Implementation of the Dini reform was, however, very gradual; it applied fully only to new entrants, while workers with at least 18 years of contributions in 1995 retained the generous DB rules, and those with fewer years entered a mixed NDC/DB system depending on their contribution history.

The reform aimed to restore intergenerational actuarial fairness and ensure long-term sustainability by strengthening the link between benefits and contributions². However, it also shifted pension risk from the welfare state to individuals: negative economic trends

¹ For a detailed description of the evolution of the Italian pension system, particularly focusing on the changes in the pension benefit formula and its progressive mechanisms, see Abatemarco et al., 2025.

² For a detailed discussion of actuarial fairness, see Belloni and Maccheroni (2013).

and fragmented employment trajectories now reduce the contributions accrued during the career, directly affecting the adequacy of the final pension (Raitano and Jessoula 2015; Treu 2015).

Following the Dini reform, the evolution of Italy's pension system continued through several rounds of adjustments—including the Prodi (1997), Maroni (2004), and Sacconi (2010) reforms. However, the most consequential change came with the 2011 Fornero reform (Law 214/2011), introduced at the height of the Eurozone crisis. This reform significantly tightened both age and contribution requirements for pension eligibility and accelerated the transition to a fully NDC system. It unified retirement ages for men and women, raising the statutory age to 67 by 2021—an increase of seven years for women—and raised the contribution threshold for early retirement to 42 years and 10 months (as of 2023).

Crucially, the Fornero reform also strengthened the mechanism introduced by the Sacconi reform (Law 122/2010) that links pension eligibility to changes in life expectancy. This mechanism automatically updates the minimum pension age every five years based on changes in life expectancy. The Fornero reform extended these automatic adjustments to the contribution requirements for early retirement and reduced the revision period from five to two years, thereby reinforcing the mechanism. Furthermore, early retirement options introduced alongside the Fornero reform, such as the "Opzione Donna" and the fully contributory early pension at age 64, offered limited flexibility. These options required strict contribution thresholds, imposed strong actuarial penalties, and were accessible only to those reaching minimum amounts above 2.8 the minimum social pensions. Consequently, uptake has remained quite low (Bovini & Paradisi, 2019), especially among individuals with low earnings or fragmented career histories (Raitano 2017)³.

The following sections will examine in more detail how these institutional choices have affected retirement transitions, involuntary labour market outcomes, health and the redistribution of pension wealth.

3. Labour Market Consequences, Welfare, and Intergenerational Spillovers

Raising the retirement age can have a variety of unintended consequences that extend beyond its immediate fiscal objectives and expected labour market effects. Although these reforms are usually designed to increase labour force participation among older individuals and reduce public pension costs, they may also lead to negative labour market outcomes and create ripple effects that impact other societal groups and welfare state provisions.

The primary reason is that not all workers are able to remain employed until the newly established statutory thresholds are reached. Empirical evidence shows that many older workers, especially those with pre-existing health conditions, or those in physically demanding, low-skilled or insecure jobs, find it more difficult to extend their working lives. Contributing factors include declining physical and mental health with age, due to

³ By permitting early retirement only for individuals whose accrued benefits are at least 2.8 times the social allowance, the system indirectly penalizes those with less favourable or discontinuous careers, thereby placing greater constraints on their ability to retire early (Raitano, 2017).

increased prevalence of chronic illnesses, functional limitations, and mental health issues. Moreover, adverse working conditions such as high physical demands, low autonomy, and limited flexibility often remain unchanged over the working life. This exacerbates the mismatch between workers' declining capacities and the demands they receive from the work environment (d'Errico et al. 2022). This interaction contributes to a reduction in work ability and regards particularly socioeconomically disadvantaged groups. Consequently, a significant share of older workers may be forced to leave the labour market prematurely—through unemployment, disability benefits, or inactivity—rather than transitioning into retirement as intended by policy.

Moreover, employability and labour market opportunities tend to diminish with age due to a combination of outdated or mismatched skills, higher labour costs, and stronger employment protection, all of which make older workers more susceptible to layoffs and slowdowns in career progression, especially in the aftermath of pension reforms that delay retirement (Bovini and Paradisi, 2019; Bianchi et al., 2022). Older adults who do lose their jobs also face substantial barriers to re-entering the labour market, as documented by Wanberg et al. (2016). This empirical evidence suggests a form of indirect age discrimination, or at least a reluctance or inability among employers to adapt work environments to the needs of ageing employees.

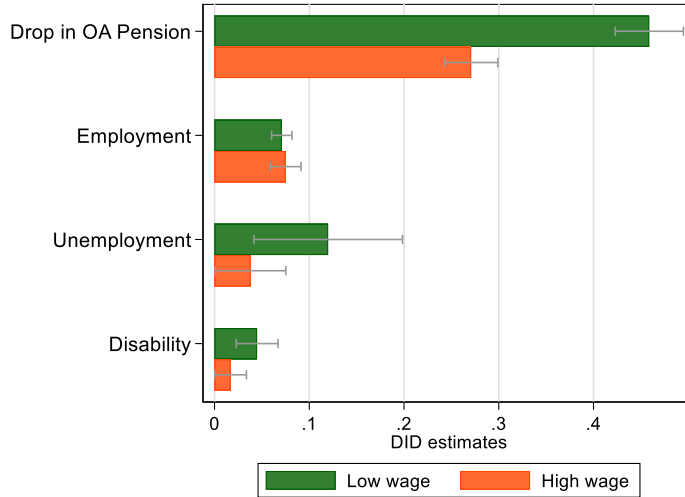
This mismatch between policy expectations and employment capacity results in a range of unintended consequences. Many older workers exit the labour market prematurely anyway, not through statutory retirement, but via alternative pathways such as disability pensions, unemployment benefits, or, increasingly, long-term inactivity (Staubli and Zweimüller, 2013; Geyer and Welteke, 2019; Ardito 2021; Serrano-Alarcón et al., 2024). These transitions do not reduce public spending but effectively shift costs from the pension system to other branches of the welfare state. Additionally, for those who fall in long-term inactivity, the consequences include extended periods without income or contributions accumulation, increasing the risk of poverty and social isolation in old age. Evidence from Italy shows that these effects are highly unequal across socioeconomic groups. In particular, the 1992 Amato reform and the 2011 Fornero reform had significant distributional consequences, with highly differentiated pattern of response to the increased minimum pension age across various socioeconomic groups (Ardito 2021; Serrano-Alarcón et al., 2024).

As illustrated in Figure 1, following the rise in the minimum pension age, low-wage workers experienced a substantial drop in access to old-age pensions, accompanied by only marginal increases in employment. Instead, many ended into unemployment, disability benefits, or inactivity, pathways often associated with greater financial insecurity and weaker social protection. In contrast, higher-wage workers adapted better to the new retirement rules, displaying higher employment retention and lower rates of involuntary labour market exits. Notably, this socioeconomic gradient is the same across genders (panels A and B), suggesting that income and occupational status are more relevant determinants than gender in shaping how individuals are affected by pension reforms.

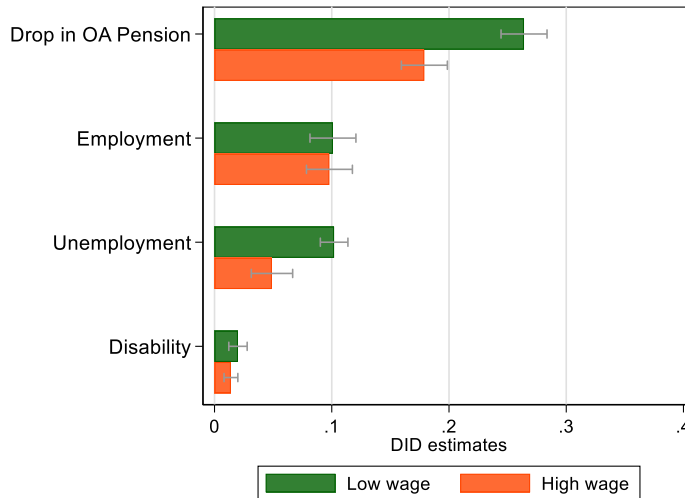
Women, however, face a distinct set of disadvantages in pension outcomes. Due to more frequent career interruptions and a higher prevalence of part-time or informal work—often linked to motherhood and caregiving responsibilities—they tend to accumulate fewer pension contributions and consequently receive lower pensions than men (Leombruni et al., 2012; OECD, 2021; Abatemarco and Russolillo, 2023). In this regard,

Figure 1: Effect of raising the normal retirement age (NRA) for old age pension (DiD estimates, % points)

Panel A: Reform raising the NRA from 60 to 65 - Men



Panel B: Reform raising the NRA from 60 to 67 - Women



Sources: Author's elaboration based on Ardito (2021, Table 5) for Panel A and Serrano-Alarcón et al. (2024, Table A9) for Panel B.

Notes to Fig. 1: The figure plots estimated causal effect (in percentage points) of the policy-induced increase in the NRA on the likelihood of entering a given labour market state using a difference-in-differences (DiD) model "Unemployment" includes both inactive and unemployed individuals, regardless of whether they received benefits. "OA pension" refers to both old-age, seniority or early retirement pensions. High and low full-time equivalent wage groups are defined using the first and third tertiles of wages measured at ages 55–59 (Panel A), and relative to the median wage at ages 49–57 (Panel B).

Möhring (2018) reveals that Italy has the largest pension child penalty among EU countries, highlighting the significant disadvantages women face in pension outcomes. These gender inequalities are further exacerbated when reforms increase the retirement age or contribution requirements without considering barriers such as limited access to formal childcare, underdeveloped elderly care infrastructure, and low labour market flexibility, which are typical of Italy (Del Boca et al., 2009).

In this context, extending working lives places significant pressure on older women, who often struggle to balance paid employment with unpaid care responsibilities (Carrino et al. 2023; Coda Moscarola et al. 2016). This is particularly true for activities that offer little flexibility, such as caring for elderly or ill relatives, which are often unavoidable (D'Errico et al., 2025). The unintended consequences of work-life extension can also spill over to younger generations: when grandmothers are less available for childcare, younger families lose an important support resource. Causal evidence shows that reduced grandparental availability can lower younger women's labour market participation (Bratti et al., 2018; Arpino et al. 2014) and affect their fertility decisions (Eibich and Siedler, 2020). This highlights how retirement policies, when designed in isolation, may have unintended consequences that even extend across generations.

4. Health Effects of Delaying Retirement

Raising the retirement age could also have unintended health consequences for those directly affected by the policy change. The relationship between retirement and health is a key area of empirical research, focusing on whether retiring from work improves or worsens health outcomes – and under what conditions. This complex relationship is shaped by multiple, sometimes opposing, mechanisms that can sometimes be in opposition to each other, influenced by factors such as a person's baseline health, the nature of their job, and the broader institutional context.

Theoretical models suggest that retirement can have both positive and negative effects on individuals' well-being. On one hand, retirement may alleviate the physical and psychological demands of work, such as strenuous tasks, low autonomy, and high stress levels (Karasek, 1979; Siegrist, 2001). It can also positively influence health by providing more time for rest, leisure activities, preventive health behaviours, and social interaction. On the other hand, retirement can be detrimental for health if it leads to the loss of a daily routine, sense of purpose, social contact and opportunities for engagement. Without these positive stimuli, individuals may experience a decline in well-being and health, including an increased risk of depression, loneliness, or cognitive decline (Atchley, 1989; Bordia et al., 2020).

Empirical evidence on the causal impact of retirement on health indicates that the overall effect varies significantly, depending on multiple factors related to the experience of work and aging. These factors include pre-retirement health status, job characteristics, individual preferences, and the circumstances under which retirement occurs, whether it is voluntary or involuntary (Vigezzi et al., 2025; Filomena & Picchio, 2023; Garrouste & Perdrix, 2022). In the Italian context, research suggests that delaying retirement can have adverse health consequences, especially for individuals with lower socioeconomic status and when it results in an abrupt change to retirement timing.

Studies that use instrumental variable (IV) methods to address the endogeneity of retirement decisions, utilizing linked administrative and hospital data from the WHIP dataset, have found that postponing retirement by even one year is associated with a significant increase in the likelihood of hospitalisation due to cardiovascular disease (CVD) among men (Ardito et al., 2020). These effects are particularly pronounced among manual workers, individuals in poor health, and those with low wages. Notably, the negative health impacts tend to manifest with a time lag, becoming evident several years after retirement. This latency supports the hypothesis that prolonged exposure to occupational strain has a cumulative and long-term impact on health.

Further evidence from the Turin Longitudinal Study (TLS) supports these findings. Fontana et al. (2024) show that a longer duration of retirement is associated with improved cardiovascular health outcomes for both men and women, based on a follow-up period of approximately 10 years after retirement. These benefits are more pronounced among workers in occupations with poor ergonomic conditions, such as repetitive movements, awkward postures and high physical demands. The authors suggest that retirement functions as a protective factor by removing harmful exposures and allowing time for rest and engagement in health-promoting behaviours. This interpretation is reinforced by both Italian and international studies that explicitly examine the effect of retirement on health behaviours. Vigezzi et al. (2021), Eibich (2015), and Kämpfen & Maurer (2015) all provide evidence that retirement encourages the adoption of healthier lifestyles, lending further support to the hypothesis that retirement can positively affect health by promoting better habits and routines.

Research conducted outside Italy also reveals socioeconomic gradients in the health effects of retirement. A recent systematic review of longitudinal studies found that retirement tends to have a more positive impact on the health of vulnerable working groups, such as those in low-quality jobs or poor working conditions (Nazar et al., 2025). Abeliansky and Strulik (2023) support this finding by showing, using frailty indices and SHARE data from ten European countries, that individuals in physically demanding, low-status jobs experience greater health improvements after retirement. Similarly, Carrino et al. (2020) examined the impact of pension reforms in the UK that increased the state pension age for women. They found that female workers in physically demanding jobs were most adversely affected by the delay to their eligibility to retire, demonstrating how the impact of such policies is shaped by the nature of one's work.

Importantly, the effects of retirement depend not only on the nature of the work, but also on how the transition to retirement occurs. Abrupt and involuntary changes to retirement timing, such as sudden increases to statutory pension ages or mass plant closures, can lead to psychological distress, and negative health outcomes (Mosca & Barrett, 2016; Filomena & Picchio, 2023).

Research from Italy highlights the importance of the announcing timing in shaping the consequences of pension reform. Recent studies show that when individuals are given sufficient time to adjust their expectations and plans, the extension of working life may lead to positive behavioural adaptations. For instance, workers who are not immediately affected by sudden reforms—but instead face a future extension of their working horizon—respond by investing more in their own human capital (Chinetti, 2024), increasing employment (Carta & De Philippis, 2024) and adopting healthier lifestyles (Bertoni et al., 2018).

In contrast, cohorts facing abrupt changes to retirement rules experience more pronounced negative impacts. Serrano-Alarcón et al. (2024) report substantial rises in sick leave and hospitalisation due to mental health issues and injuries among women whose retirement was suddenly delayed by three years due to the reform. The effects were particularly pronounced among women with a low health status prior to the reform, suggesting that abrupt and indiscriminate increases in the pension age may disproportionately harm vulnerable workers.

In summary, the Italian case suggests that raising the retirement age could incur additional costs for the healthcare system, as mental and physical health tends to deteriorate among individuals who are forced to retire later. These effects appear to be driven by more vulnerable workers, indicating that prolonged exposure to job-related risks and delayed relief can negatively impact health. Nevertheless, empirical research on the socioeconomic impact of retirement on health remains limited, and recent meta-analyses have emphasised the need for further investigation into these socioeconomic gradients (Filomena & Picchio, 2023; Garrouste & Perdrix, 2022). Furthermore, while sudden changes to retirement eligibility can have harmful consequences, gradual reforms that allow workers time to prepare may encourage positive behavioral responses in mid-career cohorts, potentially alleviating or counteracting health consequences.

5. Longevity Inequality and redistributive implication

5.1 Rising longevity inequalities

Rising inequalities in life expectancy pose a significant challenge to the design and fairness of pension systems. Life expectancy at retirement affects both the length of time benefits are received for and how pension entitlements are calculated, meaning individuals who live longer effectively benefit more from the system. In many countries, including Italy, public pension schemes address this issue by incorporating life expectancy into benefit formulas or eligibility rules via automatic adjustments. This often involves linking retirement age or annuity conversion factors to longevity trends, as in Notional Defined Contribution (NDC) systems. In some countries, adjustments are made on a one-to-one basis, where a one-year increase in life expectancy leads to a one-year increase in the statutory retirement age (e.g. Italy, Denmark, Estonia and Greece). In others, the adjustment is more moderate, for example a two-thirds link as in Finland, the Netherlands, and Portugal (De Tavernier & Boulhol, 2021).

In an NDC system, pension benefits are calculated based on the sum of an individual's contributions (plus interest), which are then converted into annuities using factors that reflect life expectancy at retirement. These annuity conversion factors aim to ensure actuarial neutrality. However, because they are based on the average life expectancy of the population, they fail to account for the existing significant disparities in life expectancy across different income levels, education, occupations, and geographic regions (Auerbach et al. 2017). Consequently, pension systems may inadvertently redistribute resources from shorter-lived, lower-income individuals to longer-lived, wealthier individuals—a phenomenon sometimes termed "perverse redistribution" (Abatemarco et al., 2025; Caselli & Lipi, 2018; Jijie et al., 2021; Lallo & Raitano, 2018).

Early research on longevity inequality, particularly from the United States, highlighted that gains in life expectancy have not been evenly distributed across socioeconomic

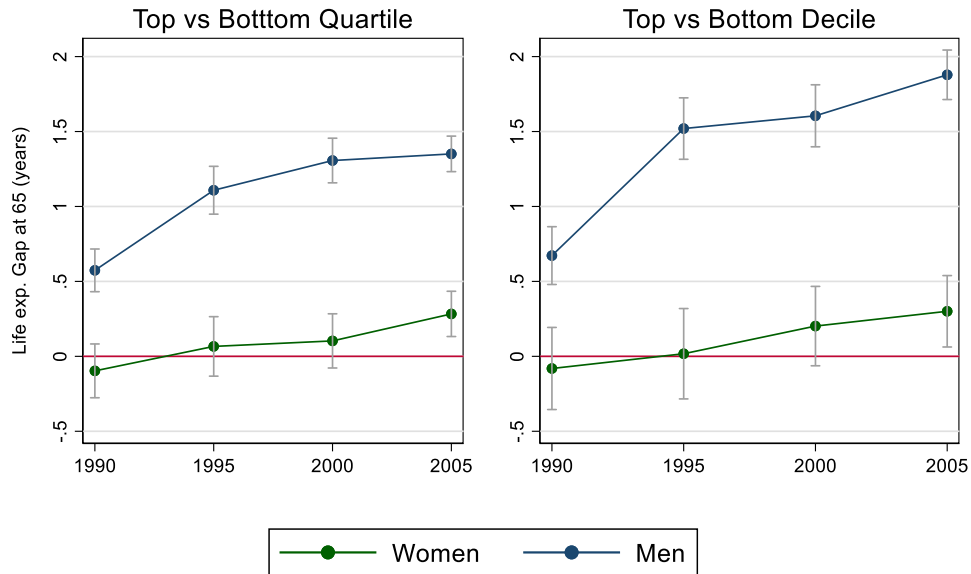
measures such as income, education and areas, with mortality gaps widening over time (e.g., Cutler et al., 2011; Case and Deaton, 2015; Currie and Schwandt, 2016; NASEM, 2015; Chetty et al., 2016). Subsequent studies from other countries, including Canada (Backer et al., 2019) and various European nations, have consistently found that individuals in the highest socioeconomic group can expect to live several years longer than those in the lowest. Moreover, these longevity gaps appear to be widening, particularly among older age groups. Unequal and widening longevity patterns were initially documented only in Nordic countries such as Denmark, Finland, Norway, and Sweden (Brønnum-Hansen & Baadsgaard, 2012; Tarkiainen et al., 2012; Zarulli et al., 2012). More recently, similar trends have been observed also in other countries, including the UK (Banks et al., 2021), the Netherlands (Bär et al., 2021), Spain (González and Rodríguez-González, 2021), Portugal (Costa and Santana, 2021), Italy (Ardito et al., 2024; Ghislandi and Scotti 2024; Abatemarco et al., 2025), the Czech Republic (Bertoli and Grembi, 2021), and Germany (Haan et al., 2020).

Evidence from Italy also supports these concerns. Linked administrative and mortality data reveal significant variations in life expectancy at retirement by income and occupation among both mid-aged workers (Ghislandi & Scotti, 2022) and older workers approaching retirement (Ardito et al., 2024; Abatemarco et al., 2025). Figure 2 shows the growing disparity in life expectancy at age 65 between low- and high-income private-sector employees in Italy, as revealed by data from the Italian National Institute of Social Security (INPS). Among men, the difference in life expectancy between the highest and lowest income groups has widened to approximately two years in recent cohorts, which is double the gap observed in the early 1990s. In contrast, among female private sector workers, life expectancy at retirement was similar across income groups until the early 2000s. While socioeconomic differences in longevity among women have begun to emerge in recent years, they remain relatively modest compared to those among men (similar to findings by Ghislandi and Scotti, 2022).

Our hypothesis is that the delayed and milder emergence of longevity disparities among Italian women reflects several factors, primarily relating to changes in female employment participation observed in Italy in recent decades. Historically, overall female labour force participation was lower and less socially stratified than it is today. Those in formal or full-time employment tended to be healthier or more highly educated, whereas the majority worked informally or part-time, or left the workforce early to care for others (Scherer & Reyneri, 2008; Olivetti & Petrongolo, 2008; Del Boca et al., 2009). This pattern of participation may have limited variation in occupational exposures and health risks across socioeconomic groups, resulting in relatively homogeneous working and longevity experiences in the past.

Therefore, it is plausible that longevity differentials have only emerged recently due to the growing participation of women in the labour force and the increasing stratification of the labour market. As female employment has increased sharply in recent decades, women's roles in paid employment may have become more differentiated by factors such as education, occupation and income. This diversification may have widened disparities in work-related exposure, health trajectories and ultimately, life expectancy.

Figure 2 Evolution of life expectancy gap at 65 years old between highest vs lowest income quantiles, by sex



Source: Ardito et al. (2024), appendix Figure B4

Notes to Fig. 2: The figure plots the time evolution of the gap in remaining life expectancy at age 65 between private-sector employees in the top and bottom income quartiles (left panel) and deciles (right panel), with 95% confidence intervals. Income is defined as real (price-adjusted) full-time equivalent earnings measured over the quinquennia 1990–1994, 1995–1999, 2000–2004, and 2005–2009. Mortality is observed over a 15-year follow-up period for all the cohorts.

Moreover, for earlier cohorts—particularly those with very low participation rates—using individual earnings or occupational class as proxies for socioeconomic position (SEP) may be inadequate, since many women were either out of the labour force or worked part-time. In these contexts, household-based indicators, such as partner’s income or occupational status, may provide a more accurate measure of social position and a stronger predictor of longevity (Bosworth & Burke, 2014).

5.2 Redistributive implications of disparities in longevity

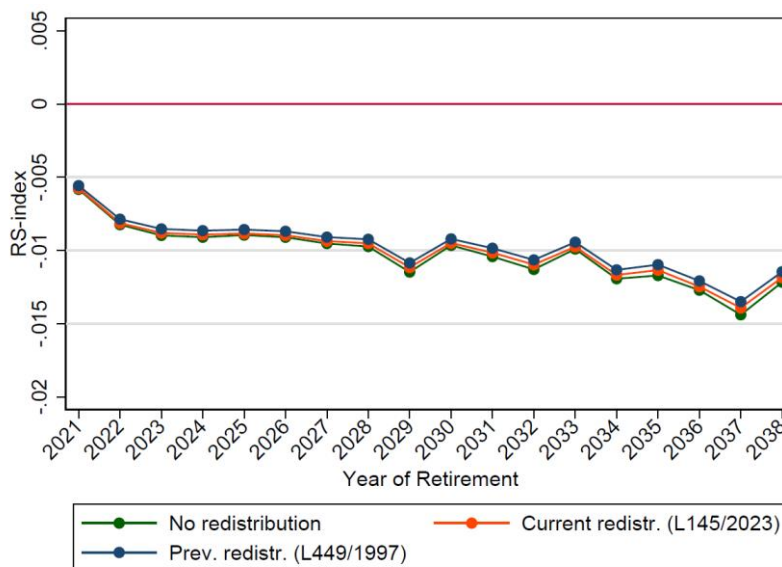
Although life expectancy gaps in Italy are smaller than in other countries, they still lead to meaningful redistributive consequences. Ghislandi and Scotti (2022) show that both pension wealth and internal rates of return are systematically higher for top income earners. Among men born between 1930 and 1934, those in the top income quintile gained around €58,000 (+5.3%) in pension wealth due to their longer life expectancy, while those in the bottom quintile lost about €13,000 (–5.7%). These differences widened for later cohorts and had nearly doubled by the 1945–1950 cohort.

In more recent work with Abatemarco and colleagues (2025), we looked at how longevity inequality has evolved and what it means for pension wealth distribution. Using a 7% random sample of INPS social security data (WHIP dataset), we simulate

career trajectories up to 2038 for individuals born between 1960 and 1971 using observed career data from 1985 to 2024. We use the Reynolds-Smolensky (RS) index (Reynolds & Smolensky, 1977) to measure progressivity.

Our results show that pension wealth redistribution in Italy is regressive, i.e. it shifts resources from poorer to richer individuals. Furthermore, as illustrated in Figure 3, the RS index is becoming increasingly negative over time, suggesting that we will observe amplified perverse redistribution in the future. As discussed in Section 4.1.1 of the paper, this trend is primarily driven by widening income-related longevity gaps and is further reinforced by Italy's transition from a defined benefit (DB) to a defined contribution (DBC) pension scheme. Furthermore, existing redistributive mechanisms, such as progressive inflation indexation, are insufficient to offset these effects, even when more generous indexation is hypothetically applied to lower earners (Figure 3).

Figure 3 Evolution of Reynolds & Smolensky index under different redistributive scenarios



Source: Abatemarco et al. (2025).

Note to Fig. 3: The figure plots the evolution of the Reynolds-Smolensky (RS) index under different law scenarios. RS is a measure the progressivity of pension wealth distribution; negative values indicate regressive redistribution. Under Law 449/1997, pensions were fully indexed to inflation up to five times the minimum pension benefit (MPB); received a partial adjustment of 30 % between five and eight times the MPB; and received no adjustment above eight times the MPB. The current system, as defined by Law 213/2023, applies full inflation indexation up to four times the MPB. Above this threshold, indexation is progressively reduced: 85% between four and five times the MPB, 53% between five and six times, 47% between six and eight times, 37% between eight and ten times, and 22% above ten times the MPB.

This evidence is consistent with findings from other countries, which also show that higher-income retirees tend to receive more than actuarially fair pensions, and that rising longevity inequality is amplifying this imbalance⁴. In light of these implications, major international institutions have raised several concerns. For example, the National Academies of Sciences, Engineering, and Medicine (2015) warned about the regressive effects that unequally distributed gains in life expectancy—benefiting the highest-income groups—have on major national programs such as Social Security and Medicare. Similarly, the OECD (2018, 2023) has repeatedly identified longevity inequality as one of the most pressing challenges facing contemporary pension policy.

Despite growing evidence and increased attention to the issue of rising longevity inequality and its implications for redistribution, no country, to the best of our knowledge, has yet implemented systematic heterogeneous annuity factors or pension eligibility criteria. While many pension systems include provisions for specific disadvantaged groups, such as those in arduous or hazardous jobs, strikingly, about one-third of EU countries still do not provide preferential treatment for such workers (Natali et al., 2016).

Where preferential provisions exist, they typically offer early retirement options to compensate for the health and mortality risks associated with certain job exposures. For example, Austria, Croatia, Greece, Finland, France, Luxembourg, Italy, Portugal, Romania and Spain permit earlier retirement, whereas Estonia, Greece, Romania and Slovenia grant higher replacement rates (Grossmann et al., 2024). However, the effectiveness of these measures is limited, and these measures only partially address the broader socioeconomic disparities in health and life expectancy. Existing “lists of jobs” qualifying for preferential treatment often have overly rigid and restrictive eligibility criteria, leaving much of the intended target population uncovered (Leombruni et al. 2014). Moreover, in many cases these lists are outdated and influenced more by budget constraints and political bargaining rather than by robust scientific evidence, which reduces their ability to address the underlying challenges effectively (Jessoula et al. 2016).

6. Summary and Policy Implications

Pension reforms that increase the statutory retirement age are often justified by the need to ensure the financial sustainability of pension systems and to adapt to demographic ageing. These measures succeeded to extend working life for many workers and to contain public expenditure. However, as this review has shown, one-size-fits-all policies that ignore the diverse realities of ageing, health, and work trajectories, risk to affect negatively disadvantages workers—those in poorer health, employed in more physically and psychologically demanding or low-paid jobs, and women.

The evidence reviewed points to several concerns. First, higher retirement ages do not always translate into longer employment, as it also increases the likelihood of early labour market exit through disability, unemployment, or long-term inactivity—unvoluntary outcomes that are more common among individuals from lower socioeconomic backgrounds. Second, extending working life often entails prolonged

⁴ For a review of the literature on longevity inequality and its regressive implications for pension wealth, see Abatemarco et al. (2025).

exposure to adverse working conditions, which is associated with a deterioration in physical health, particularly an increased risk of cardiovascular disease among men and mental disorders among women. Abrupt changes to retirement rules tend to exacerbate these effects, especially for workers with limited resources or flexibility to adjust. Third, retirement rules based on average life expectancy, when combined with persistent and widening inequalities in longevity, result in significantly lower pension wealth and lower internal rates of return for shorter-lived individuals. Finally, gender shapes all these patterns. Despite historically, no clear longevity gap was observed among women, this has begun to change. As female participation has risen—now including more low-skilled and low-educated women in full-time work—the female workforce has become more socially stratified, and inequalities in longevity have started to emerge. Monitoring these trends will be crucial to prevent their further widening, especially given the challenge of reconciling longer working lives with increasing care responsibilities.

Addressing these risks requires pension reforms that are gradual, predictable, and embedded in a broader strategy to reduce health and labour market inequalities over the life course. Preventive measures should aim improving working conditions, adapting tasks and workplaces to the needs of older and less healthy workers, and promoting continuous training at work. Compensatory measures should be reinforced to include more progressive pension rules, differentiated annuity factors and eligibility criteria, and stronger non-contributory pensions to protect those unable to accumulate sufficient contributions.

Ultimately, pension policy should not operate in isolation. Non-pension policies can play a decisive role in creating environments that enable and sustain longer working lives. Measures such as expanding access to affordable childcare, strengthening long-term care, and fostering flexible and inclusive labour markets, can help remove structural barriers that prevent many people from remaining in employment. Without such complementary measures, extending working life risks deepening existing inequalities rather than promoting fairer and more sustainable participation in the labour market at older ages.

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