

# The Economic Impact of Longevity

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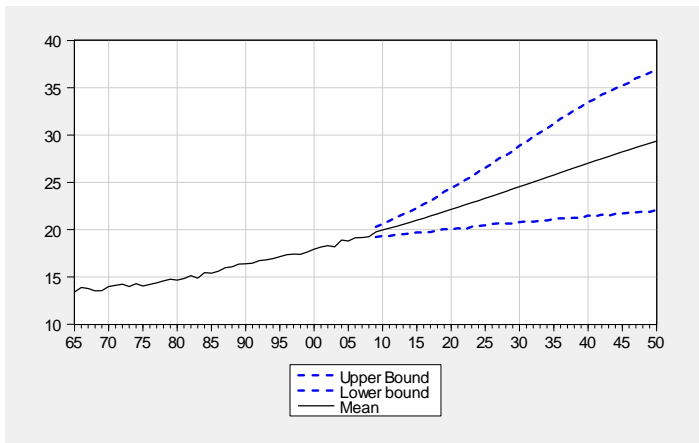
# Plan of the talk

- Some facts on Longevity and Longevity Risk
- Longevity and Economic and Financial Decisions
- The impact of Longevity Risk on Pension systems

# Some facts on longevity

- Life expectancy at 65 in Italy has increased by four hours each day that has passed over the last 30 years.
- It was about 15 years thirty years ago, it is about 20 years now.
- The projected trend for the next 40 years is similar but high uncertainty is attached to it.
- The 95 per cent confidence interval for EL at 65 in 2050 ranges from a minimum of 22 to a maximum of 36.

# Some facts on longevity



Life Expectancy at 65 in Italy. Observed data 1965-2009, model (Lee-Carter) simulated data 2010 onwards

# Longevity and Economic Decisions

- To understand economic decisions by agents divide life in three-periods: pre-working age, working-age and retirement
- As agents save only in the central period of their life longer expected life (with constant natality and fixed migration) implies population ageing and a different dynamics of consumption and savings
- Longevity implies higher pension expenditure and uncertainty associated to longevity implies more risk for the pension system
- Modern pension system collect funds from agents in their working age to sustain a pension payment in the retirement age. If life turns out to be longer than that used by the pension system to equate contributions to pension payments, then the risk that equilibrium of the system will break down emerges

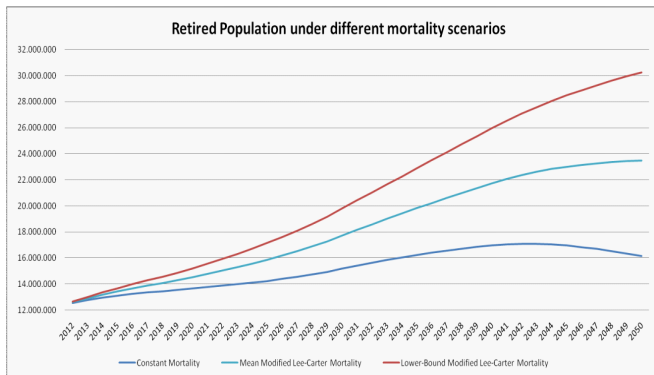
- As supply of funds to financial market depends on savings, asset prices will in equilibrium reflect the age structure of the population
- International Capital Flows and the balance of payment should also be eventually affected by the age structure
  - foreign savings supplement (at a cost) domestic savings when they are not sufficient to sustain investment

Our strategy to assess the impact of longevity risk on the Italian pension system is based on three steps.

- First, we derive the numerosity of each cohort of retirees up to 2050 by using the Lee-Carter mortality model to project future mortality and by applying it to the current population pyramid. As future mortality rates are projected with uncertainty, a confidence interval is associated to future population at each age.
- Second, pension payments to each cohort in the future are projected using institutional information on the Italian pension system.
- Third, total old-age pension expenditure as a ratio of GDP is projected over the horizon 2012-2050 with its associated confidence intervals.

# Projecting the age structure of the Italian population

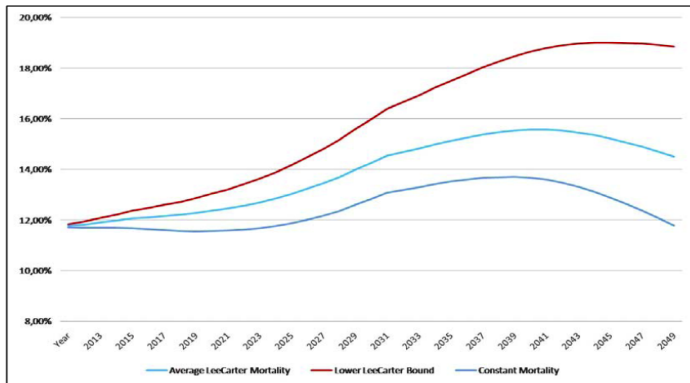
Italian retired population estimates, 2012-2050



Retired population (65+) increasing from 12.5 million in 2012 to 30.3 million in 2050 (+140% in 40 years) in the upper-bound longevity scenario

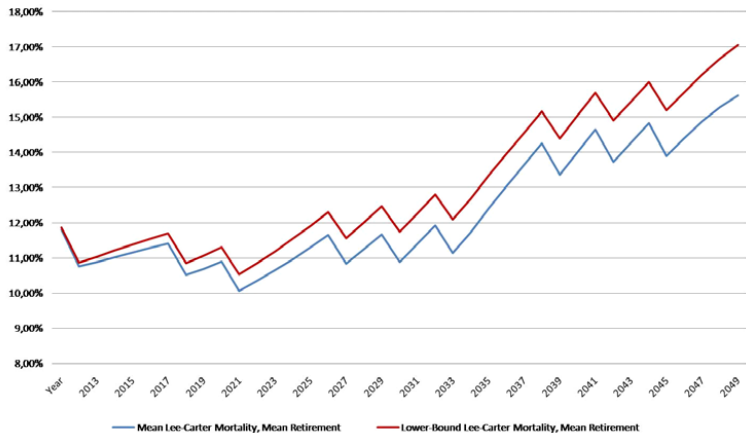


# Expected Pension Expenditure/GDP, 2012-2050



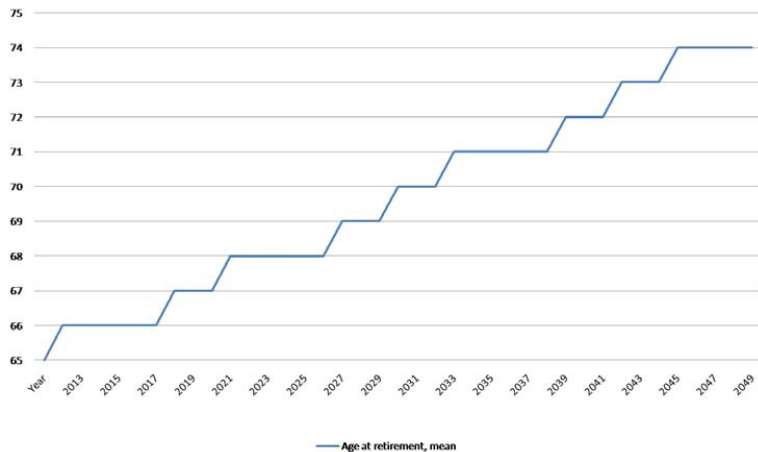
Longevity risk has an average impact on pension payments of 4 per cent of GDP per year over the period 2040-2050

# The effects of indexation of retirement age



Longevity risk when retirement age is indexed to the increase in life expectancy to deliver a constant expected retirement period of 20 years

# The effects of indexation of retirement age (cont'd)



Age at retirement when indexation applies

# The redistributive effect of longevity risk

- Longevity risk is likely to affect in heterogenous way different groups of populations
- If longevity is positively correlated with income than longevity risk has a regressive impact on pension payments
- If longevity is negatively correlated with tobacco consumption, then longevity risk imposes an (implicit) tax on smokers
- These correlations would pose an interesting questions about hidden redistributive effects of longevity