

ECON 4310 Pension systems¹

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8 Pension systems

8.1 What are the issues?

Roadmap of lecture:

- Why do we have pension systems in the first place?
- What do current pension systems look like?
- Why must current systems in OECD countries be reformed?
- What are the proposed reforms?

8.2 Rationales for existence of pension systems

1. **Economic rationale 1:** Pension systems may solve problem of dynamic inefficiency by helping an economy get out of a situation with “too low” MRS, i.e., an equilibrium with $MRS < (1 + n)(1 + g)$, where n is population growth and g is productivity growth per worker.
2. **Economic rationale 2:** The government may face a time-consistency problem (the so-called “Samaritan’s dilemma”), namely that it must, *ex-post*, help out individuals who retire with too little savings. Thus, the government cannot promise, *ex-ante*, to not bail out poor retirees.
 - For simplicity, assume that the government will provide a consumption-floor \bar{c} to retirees with wealth below \bar{c} . To make the example concrete, the budget constraints are then given by

$$\begin{aligned}c_t^h(t) &= (1 - \tau) \omega_t^h(t) - k^h(t + 1) \\c_t^h(t + 1) &= \begin{cases} \lambda k^h(t + 1) & \text{if } \bar{c} \leq \lambda k^h(t + 1) \\ \bar{c} & \text{if } \bar{c} > \lambda k^h(t + 1), \end{cases}\end{aligned}$$

where τ is a pension tax on the young.

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Clearly, agents will either save so much that old-age consumption is well above \bar{c} , or they will speculate in being bailed out, saving zero, so that they get to maximize consumption when young (and get the biggest possible transfer) – the “rotten kid theorem”. Problem: there is too little saving compared to what is Pareto-optimal (those who are bailed out could structure their consumption path differently and obtain a higher utility, without the others being worse off), and therefore too much wealth-inequality.

- Possible solution: the government could promise a pension \bar{c} to everybody, and this will serve as a commitment device not to bail out. This could be a Pareto-improvement as it would distort less the consumption-savings decisions.
3. **Economic rationale 3:** A pension system where benefits are linked to productivity growth can help different generations share risk. For example, retirees could share some of the burden (gain) of a large fall (boost) in productivity if their pension is growing at the same rate as wages.
 4. **Political rationale 1:** Paternalism: the government thinks that agents save too little on their own, due to either
 - (a) some agents don’t understand their future needs, or
 - (b) some agents attach low weight on future consumption and therefore save less than what the government would like.
 5. **Political rationale 2:** Given that a pension system is already in place, it might be very difficult to dismantle it, as a large fraction of the population would loose on cancelling it (all the retirees and most of the workers who are close to retirement).

8.3 A description of the current systems (1960-1990)

- Consider an economy with population growth $N(t) = (1+n)N(t-1) = (1+n)^t N(0)$ and productivity growth (i.e. growth in endowments), $\omega_t^h = [(1+g)^t \varphi_h, 0]$, where φ_h reflects income-heterogeneity:

$$\varphi_h = \begin{cases} 1/2 & \text{if } h \text{ is odd} \\ 3/2 & \text{if } h \text{ is even.} \end{cases}$$

- The government issues a flat proportional tax on young agents’ endowments $\tau_t(t) = \tau$, intended to be constant. There is some flexibility to choose retirement date, but strong incentives to not work longer than 67 in Norway (compared to e.g. 65 in Sweden and the U.S.).
- Pension benefits stem from a pay-as-you-go-system (PAYGO) with a defined-benefits-plan.
 - **PAYGO:** pension tax revenues in a particular year finance pension benefits that year.

- **Defined benefits:** the pension system defines the *benefits* an agent will receive:
 - * Weak link between an individual’s tax contributions and his/her benefits. For simplicity, we suppose that pension benefits in period t are given by a lump-sum $x(t)$. Thus, the pension system provides redistribution.
 - * Promises about future $x(t+1)$ were based on *expected* growth in population n , labor productivity g , and longevity.
- Computing pension benefits:

$$\begin{aligned}
 x(t) \cdot N(t-1) &= \tau_t(t) \sum_{h=1}^{N(t)} \varphi_h (1+g)^t = \tau_t(t) \cdot (1+g)^t \cdot N(t) \\
 &\Rightarrow \\
 x(t) &= \frac{N(t)}{N(t-1)} \tau_t(t) \cdot (1+g)^t = (1+n)(1+g)^t \cdot \tau_t(t).
 \end{aligned}$$

8.4 Why must the systems be reformed?

1. The system will become bankrupt within 10-20 years unless it is reformed. Reasons:
 - (a) Productivity growth fell in the 1970’s from 3-4% per year to 1-2% per year, i.e. an unexpected fall in g . Moreover, the length of an average life rose unexpectedly, so the number of retirees grew faster than expected. Both factors imply that taxes must either increase or one must default on the promises made in the past (and make new and less optimistic promises to new generations).
 - (b) Fertility rose in the 1950’s and fell unexpectedly in the 1960’s, implying a fall in population growth (from 1-2% to zero) and a big “baby-boom” generation who will retire around 2020. This implies larger tax revenues now and tighter budgets in 20-30 years. Solution: governments must start saving to pay for this.
2. The system is viewed as complicated and unfair:
 - (a) Pensions depend on part earnings in a complicated way, so that it’s very difficult to compute one’s pension and the impact of current tax contributions on future earnings.
 - (b) The current rules imply a lot of redistribution which, according to many, distorts labor supply.
 - (c) This redistribution is perceived as unfair, as it transfers income from e.g. smokers and working-class men to educated and healthy women.
3. As the health of individuals over 50 has increased substantially even during the last 30 years, people can easily extend the working life (which could be achieved through increasing the retirement age).

8.5 What are the dimensions of proposed reform?

- Increase government savings (moving towards a “fully funded system”) in order to deal with the baby-boomers:
 1. The government should save more in order to be able to pay for the pensions of the baby-boomers. This can be achieved by making the pension system autonomous and independent of the rest of the government, something that involves building up a large pension fund over the next 30 years (and eat out of it during the period 2030-2050).
 2. Additional gain: Lower political risk – an autonomous pension system would make it more difficult to raid the pension system later (i.e., default on promises).
 3. Increase savings by increasing retirement age and increasing taxes
- Moving from a defined benefit-system to a defined contribution-system:
 1. Make pensions track lifetime income more closely, in order to make the link between contributions and pensions more clear. One implication of this is that there is less redistribution in the system.
 2. Promised pensions should be based on *realized* growth in productivity, population, and longevity.
- Other reforms: Some fraction of a cohort’s pension contributions should be invested in stocks in order to
 1. achieve better risk sharing between cohorts, and
 2. exploit the high expected equity premium.
- Note: Each of these potential reforms are *independent* of each other and could be implemented independently. However, any reform should be analyzed in connection with the overall fiscal policy (debt-policy and tax-redistribution policies.)