

Longevity risks in Pension Systems viewed from the pay-out phase in Chile



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I. Hard facts: longevity is a world wide phenomena.

II. Consequences: longevity affects all pension systems:

- DB/DC,
- PAYG/Capitalization,
- Closed/Open

III. Looking for solutions in the Chilean *DB* payout phase

Ageing, an international comparison

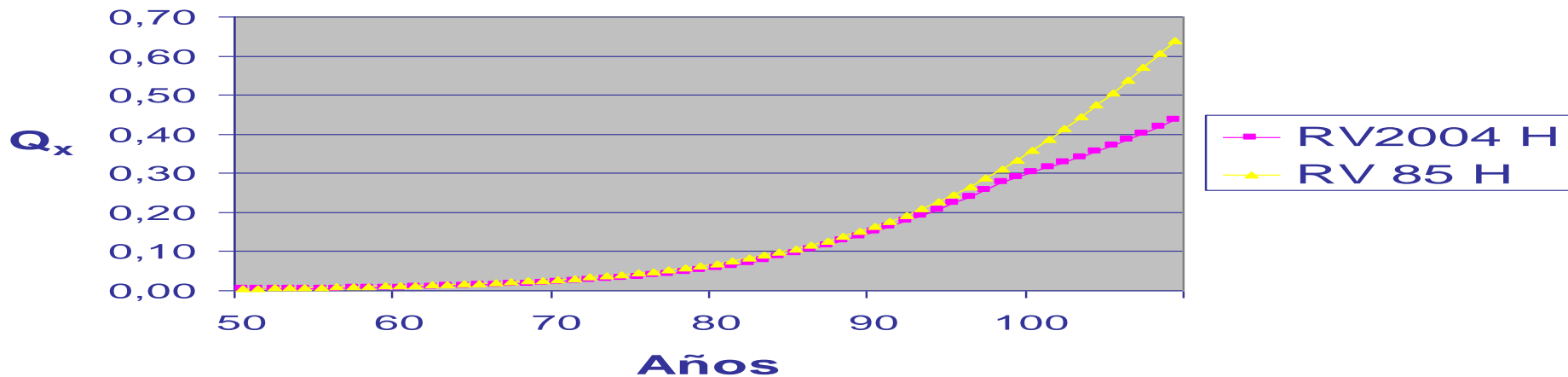
Life expectancy at birth (both genders)



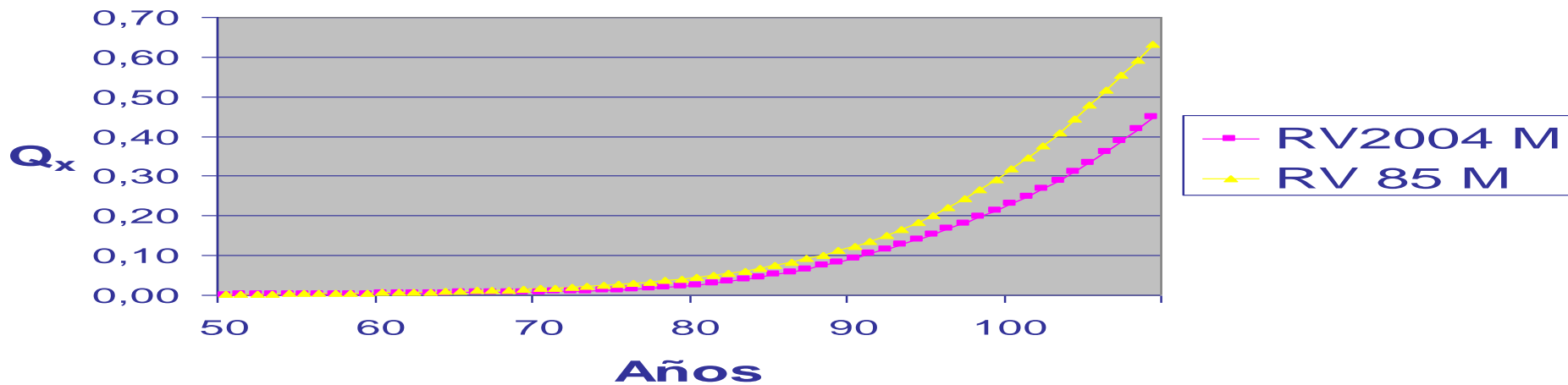
Source: <http://www.un.org/esa/population>

■ 1950/55 ■ 2045/50

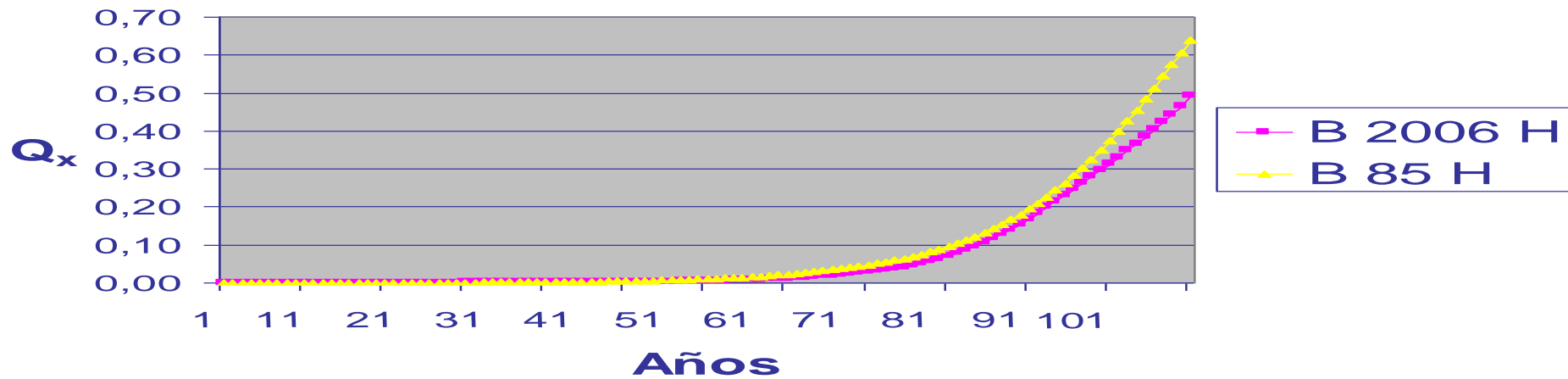
Tablas de mortalidad rentistas hombres



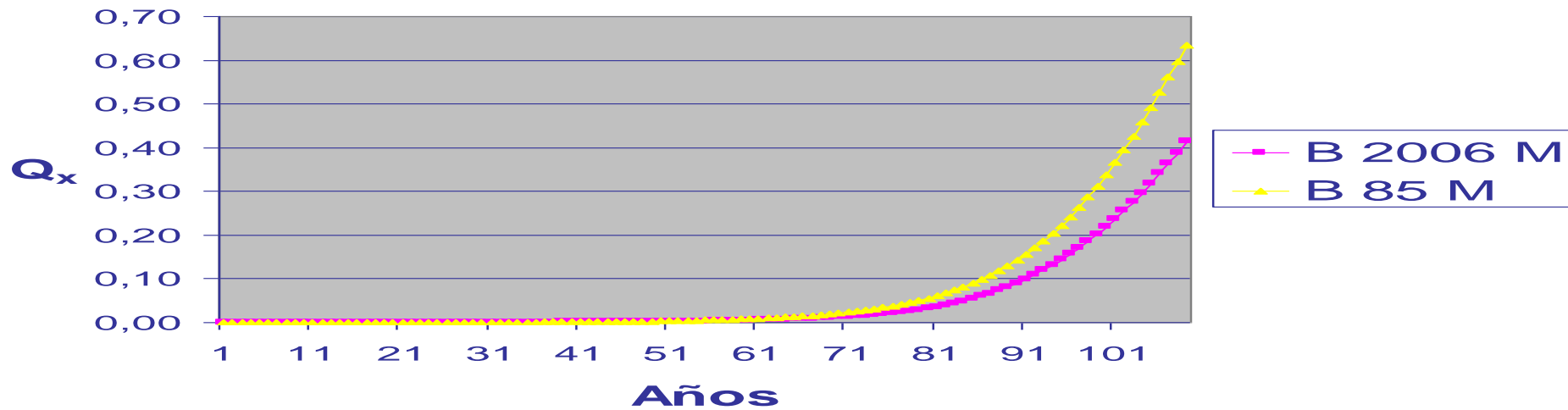
Tablas de mortalidad rentistas mujeres



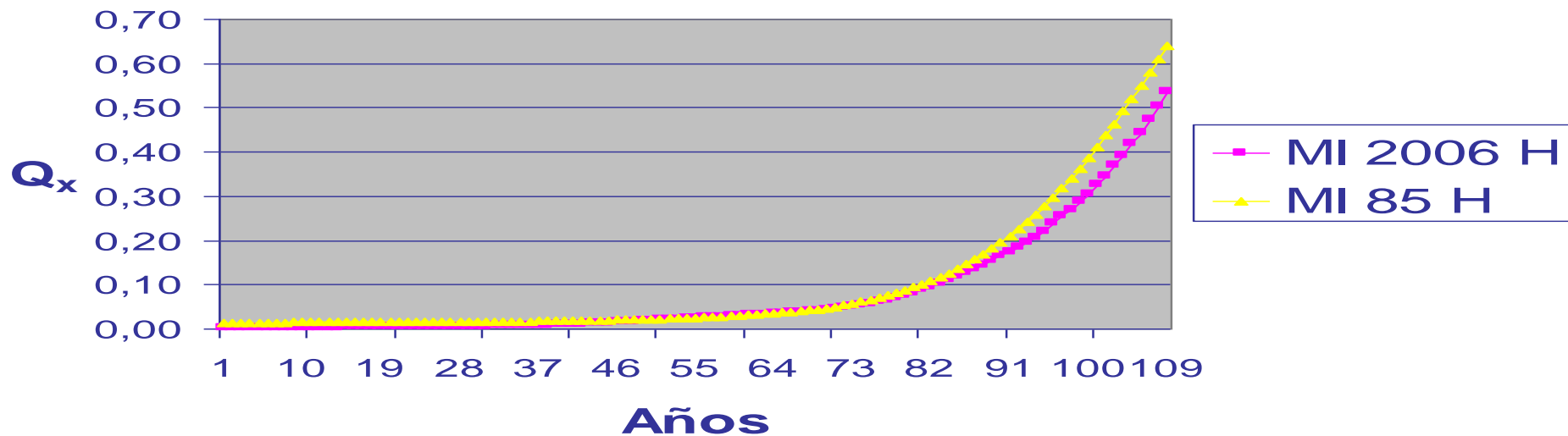
Tablas de mortalidad beneficiarios hombres



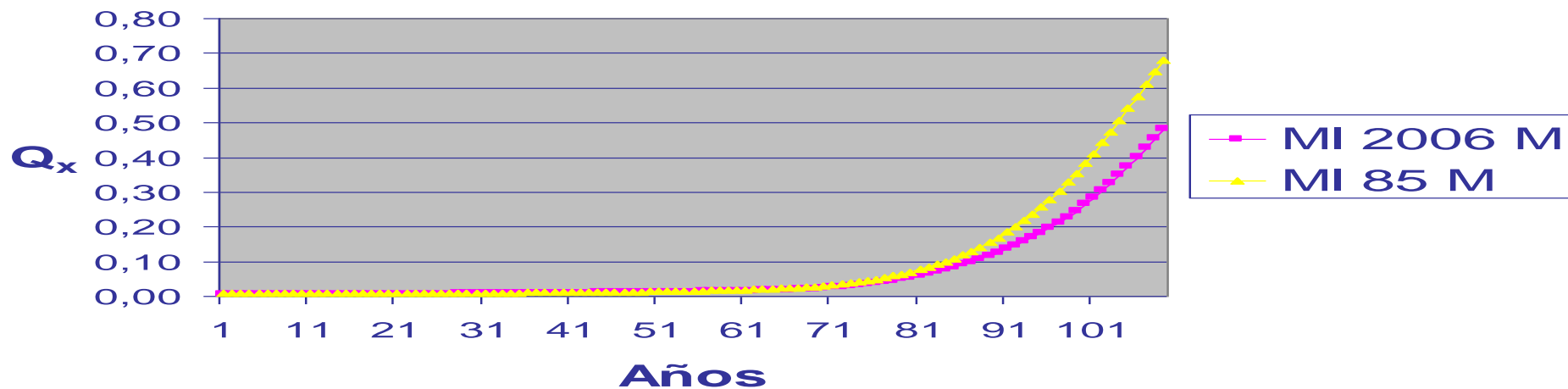
Tablas de mortalidad beneficiarios mujeres



Tablas de mortalidad inválidos hombres



Tablas de mortalidad inválidos mujeres



Pensioners

Esperanza de vida según tabla de mortalidad

| Edad | Male | | | Female | | |
|------|-------|---------|------------|--------|---------|------------|
| | RV-85 | RV-2004 | Diferencia | RV-85 | RV-2004 | Diferencia |
| 45 | 32,71 | 35,17 | 2,46 | 37,79 | 42,48 | 4,69 |
| 50 | 28,36 | 30,71 | 2,35 | 33,16 | 37,67 | 4,51 |
| 60 | 20,29 | 22,12 | 1,83 | 24,32 | 28,38 | 4,06 |
| 65 | 16,65 | 18,16 | 1,51 | 20,21 | 24,04 | 3,83 |
| 70 | 13,34 | 14,56 | 1,22 | 16,36 | 19,83 | 3,47 |

Beneficiaries

Esperanza de vida según tabla de mortalidad

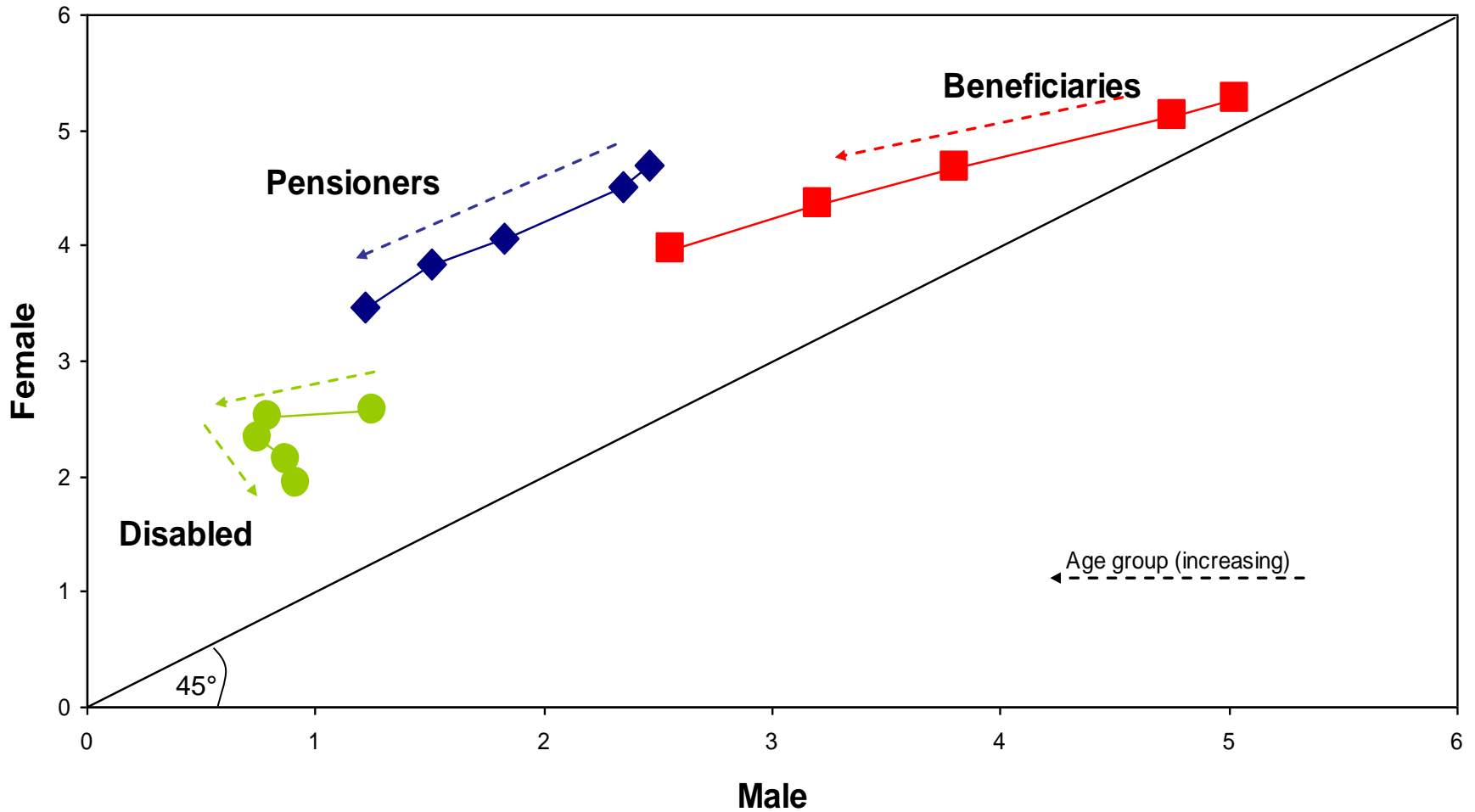
| Edad | Male | | | Female | | |
|------|-------|--------|------------|--------|--------|------------|
| | B-85 | B-2006 | Diferencia | B-85 | B-2006 | Diferencia |
| 45 | 30,28 | 35,31 | 5,03 | 35,55 | 40,82 | 5,27 |
| 50 | 26,07 | 30,83 | 4,76 | 31,01 | 36,13 | 5,12 |
| 60 | 18,41 | 22,21 | 3,80 | 22,44 | 27,12 | 4,68 |
| 65 | 15,04 | 18,24 | 3,20 | 18,52 | 22,88 | 4,36 |
| 70 | 12,05 | 14,61 | 2,56 | 14,9 | 18,87 | 3,97 |

Disabled

Esperanza de vida según tabla de mortalidad

| Edad | Male | | | Female | | |
|------|-------|---------|------------|--------|---------|------------|
| | MI-85 | MI-2006 | Diferencia | MI-85 | MI-2006 | Diferencia |
| 45 | 23,79 | 25,04 | 1,25 | 29,25 | 31,83 | 2,58 |
| 50 | 21,18 | 21,97 | 0,79 | 26 | 28,51 | 2,51 |
| 60 | 15,97 | 16,72 | 0,75 | 19,52 | 21,84 | 2,32 |
| 65 | 13,43 | 14,3 | 0,87 | 16,34 | 18,48 | 2,14 |
| 70 | 10,96 | 11,88 | 0,92 | 13,22 | 15,15 | 1,93 |

Increase in life expectancy at age



- Ageing is universal
- It is more acute in countries like Chile
- It may have more impact in rich countries because they had developed more generous PAYG pension systems
- Two broad conclusions:
 - Retirement age is critical in view of ageing populations
 - Women appear to outpace men's ageing. Huge gender issue with vast implications (social, political, economic, etc...)

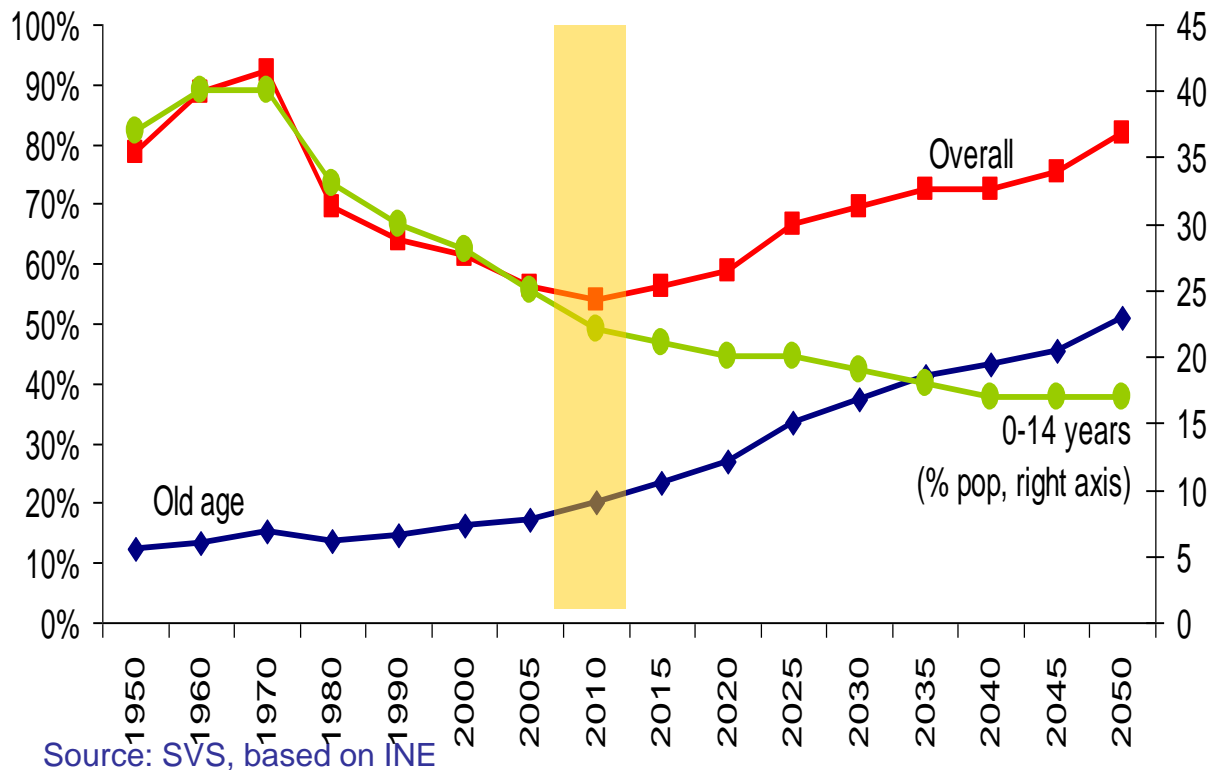
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Dependency ratios

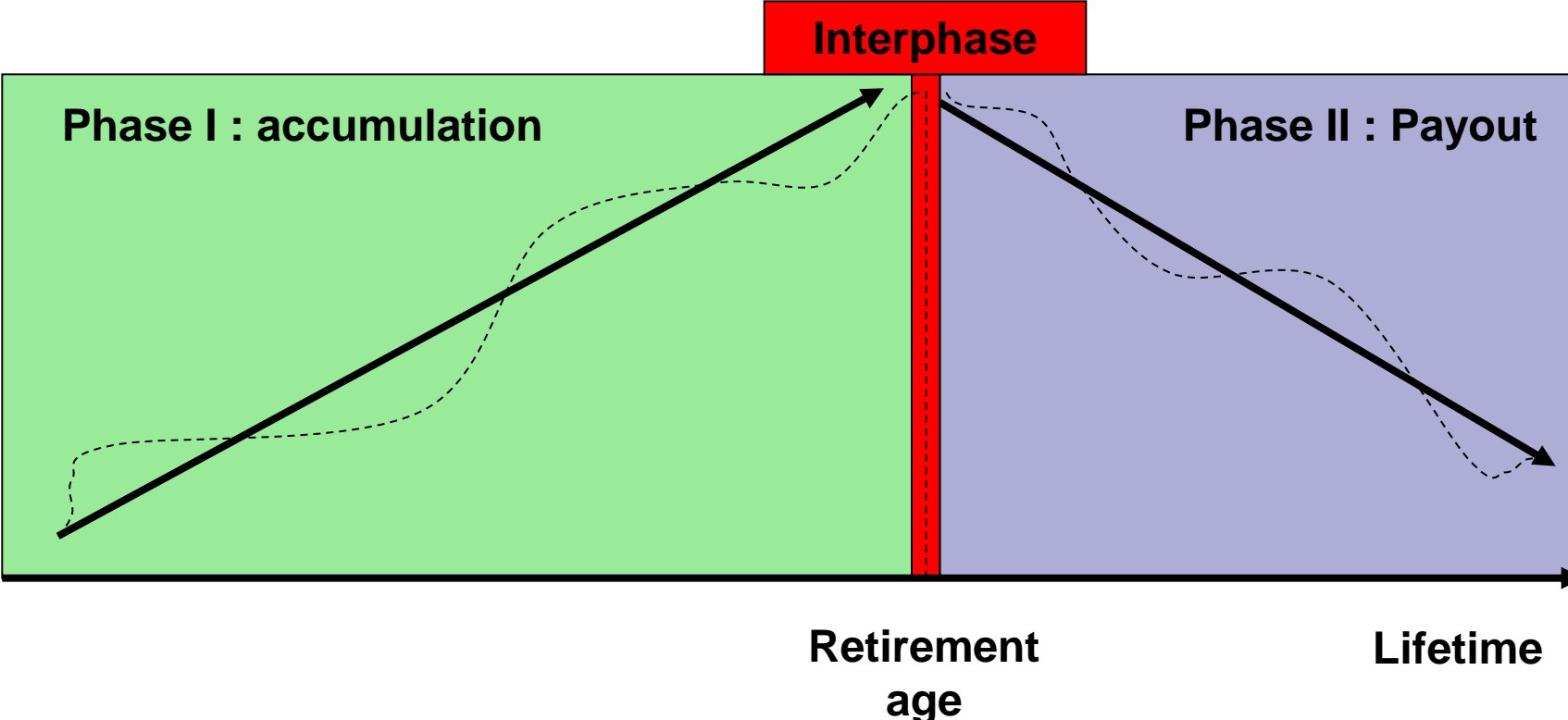


- Increasing dependency ratios require:**
- Increasing state financing (to be financed by taxes or reducing other expenditures)
 - Increasing personal contributions

Ageing progresses without clear bound and birth rates stall, hence

The previous process is unbound: enormous fiscal pressure whose political economy is complex (tendency to delay decisions evident)

Pensions are diminished (for any size of personal savings, it is necessary to finance more years of survival): the buffer becomes people's pensions instead of public finances... or so it seems at first glance



This is a system. As such, the outcome depends on all of its parts

$$\text{Pension} = \frac{\text{Net savings}}{\text{Life expectancy at retirement}}$$

Retirement age

Personal contributions (size, frequency, starting age)

Employers contributions (matching)

State contributions (incentives)

Financial returns in accumulation phase

Financial returns in payout phase

Costs

Operational during accumulation phase

Transactional in the interphase of acc/payout

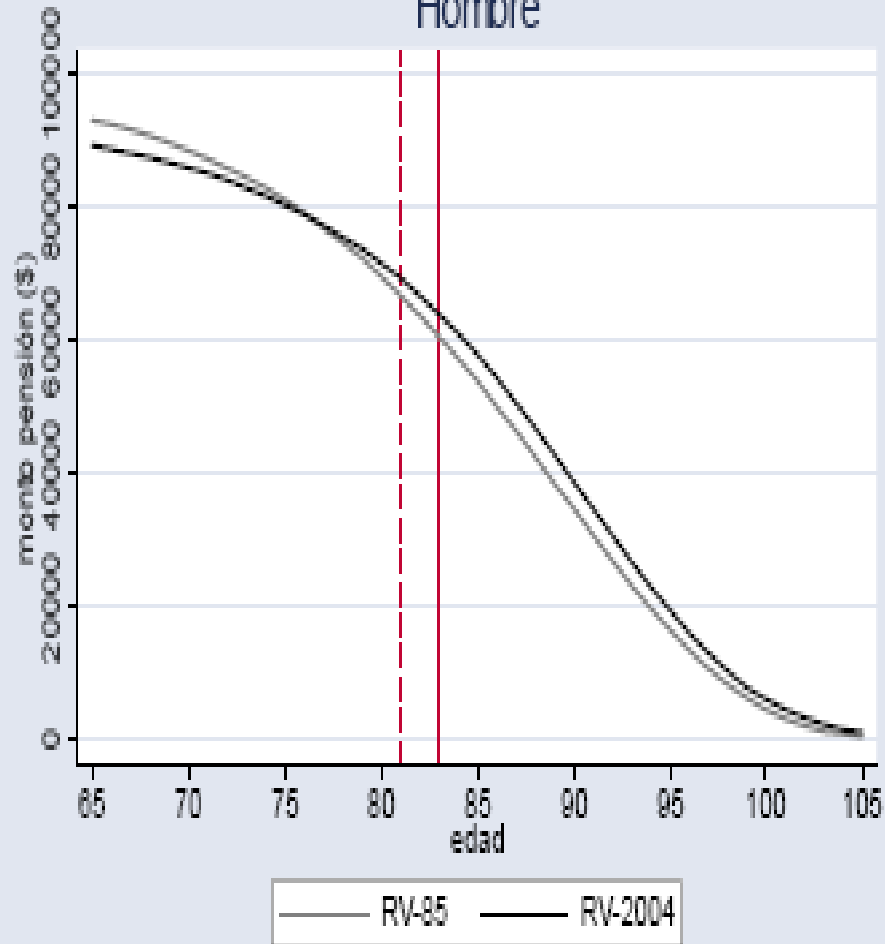
Operational during payout phase

The ongoing pension reform in Chile took care of all of this elements plus a critical redefinition of the zero-first pillar

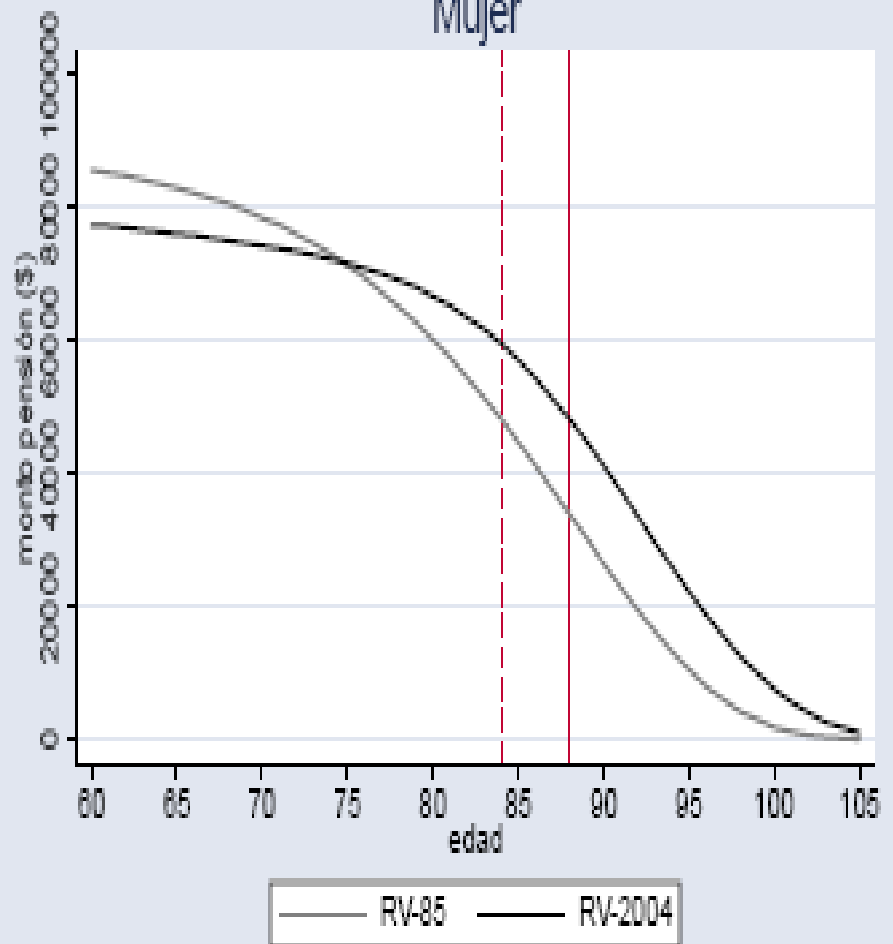
Trayectoria de la pensión en Retiro Programado (fuente: SAFP)

Líneas verticales expectativas de vida: - - - RV85 y — RV 2004

Hombre



Mujer



Spreads are reduced inducing LICs to look for ways of compensation

Potential increase in investment risks

**Incentive to reduce operational costs:
potential market concentration**

Increase in capital and reserve requirements to face increased pension obligations

Increased competition may induced “commercial war” with unintended consequences on undesired practices

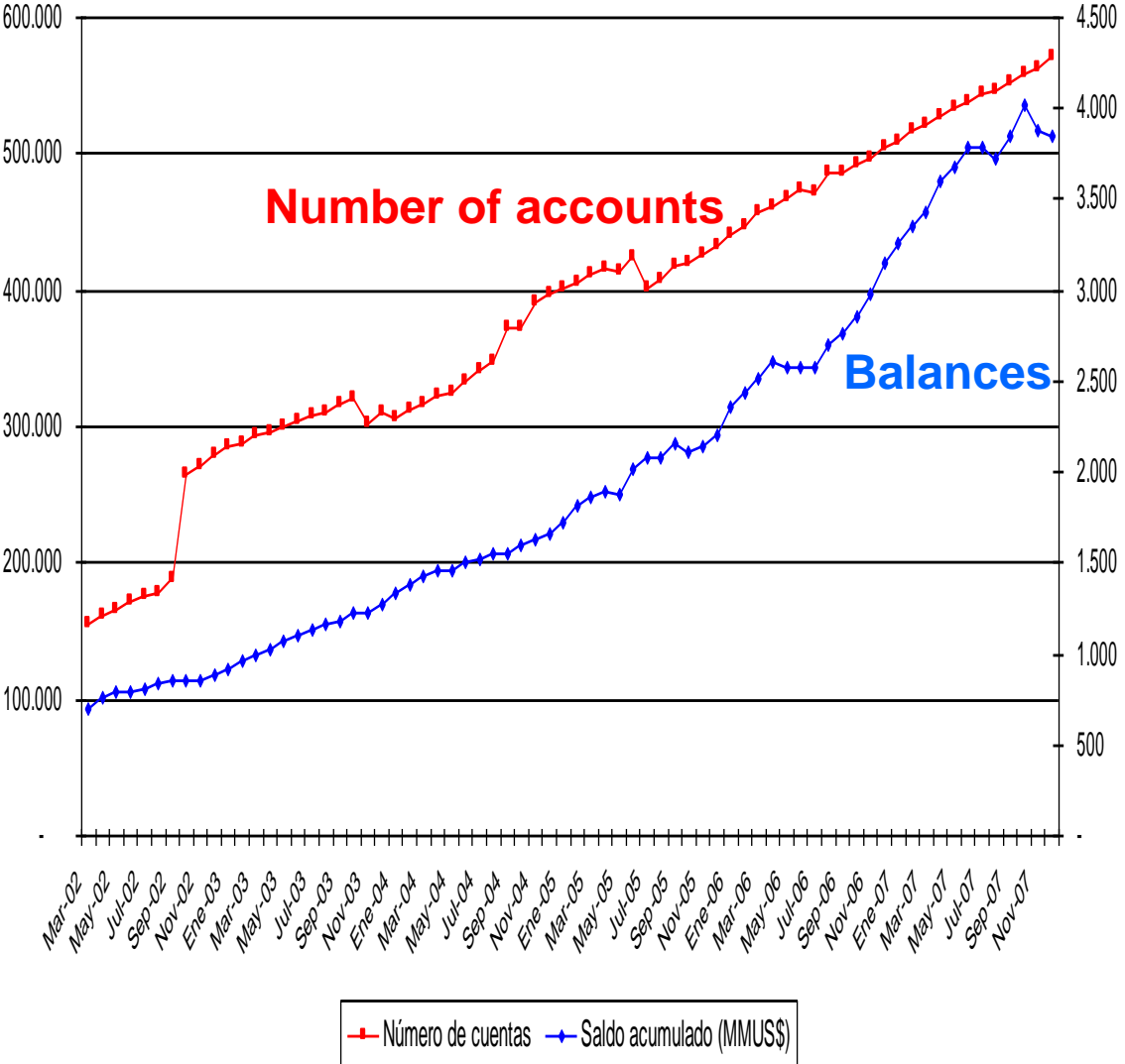
- I. Hard facts: longevity is a world wide phenomena.

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Individual Voluntary Savings Scheme (APV)

- Tax incentive (suitable therefore only for income tax payers: upper middle class)
- More financial institutions allowed
- Attractive liquidity feature : unless mandatory savings, APV can be consumed before retirement.
- Taxes are paid when consumption takes place



Colective Voluntary Savings Scheme (APVC, just introduced)

- Tax incentive with liquidity feature as in APV
- Financial institutions allowed as in APV

New features

- Matching contribution from employer, tax deductible
- All APVC plans offered to employees are open to them: *no discrimination permitted*
- Worker has rights over her savings and earns the *right over the matching contribution after some time*. Possible use as an incentive device to promote permanence in the firm (hence, training, productivity...)
- *Minimum number of workers within the firm* must adhere to any savings plan to make the firm eligible for tax benefit: this grants access to lower middle classes

Tougher conditions for early retirement and use of excedent of free disposal.

■ Early retirement.

- **Before 2004:** resulting pension should be 110% of minimum pension and greater than the 50% of the last 10 years income.
- **After 2004:** same criteria but new parameters 150% of minimum pension and 70% of last 10 years income..

■ Excedent of free disposal.

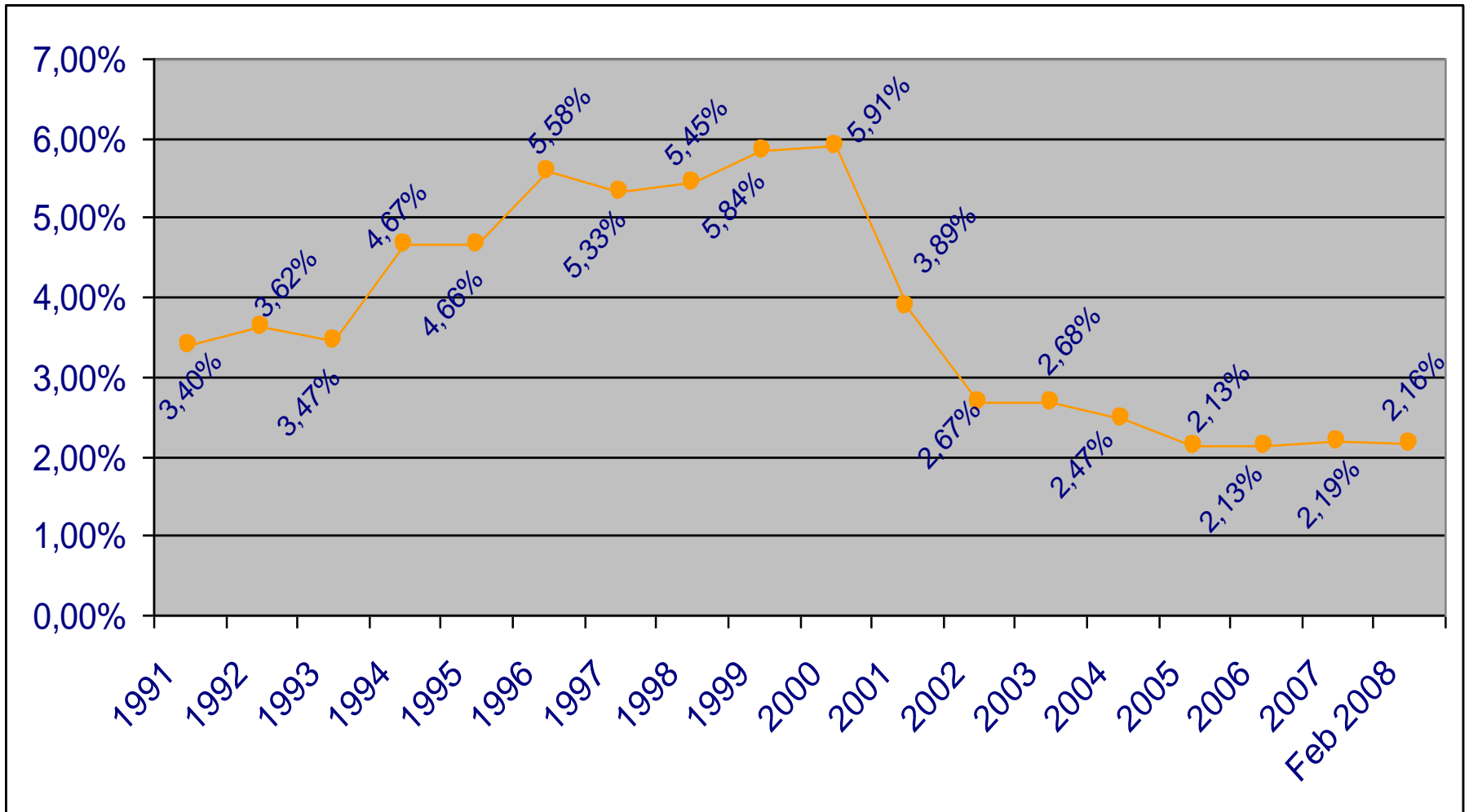
- **Antes de 2004:** Igual que retiro de ELD
- **Ley Año 2004:** Igual que retiro de ELD

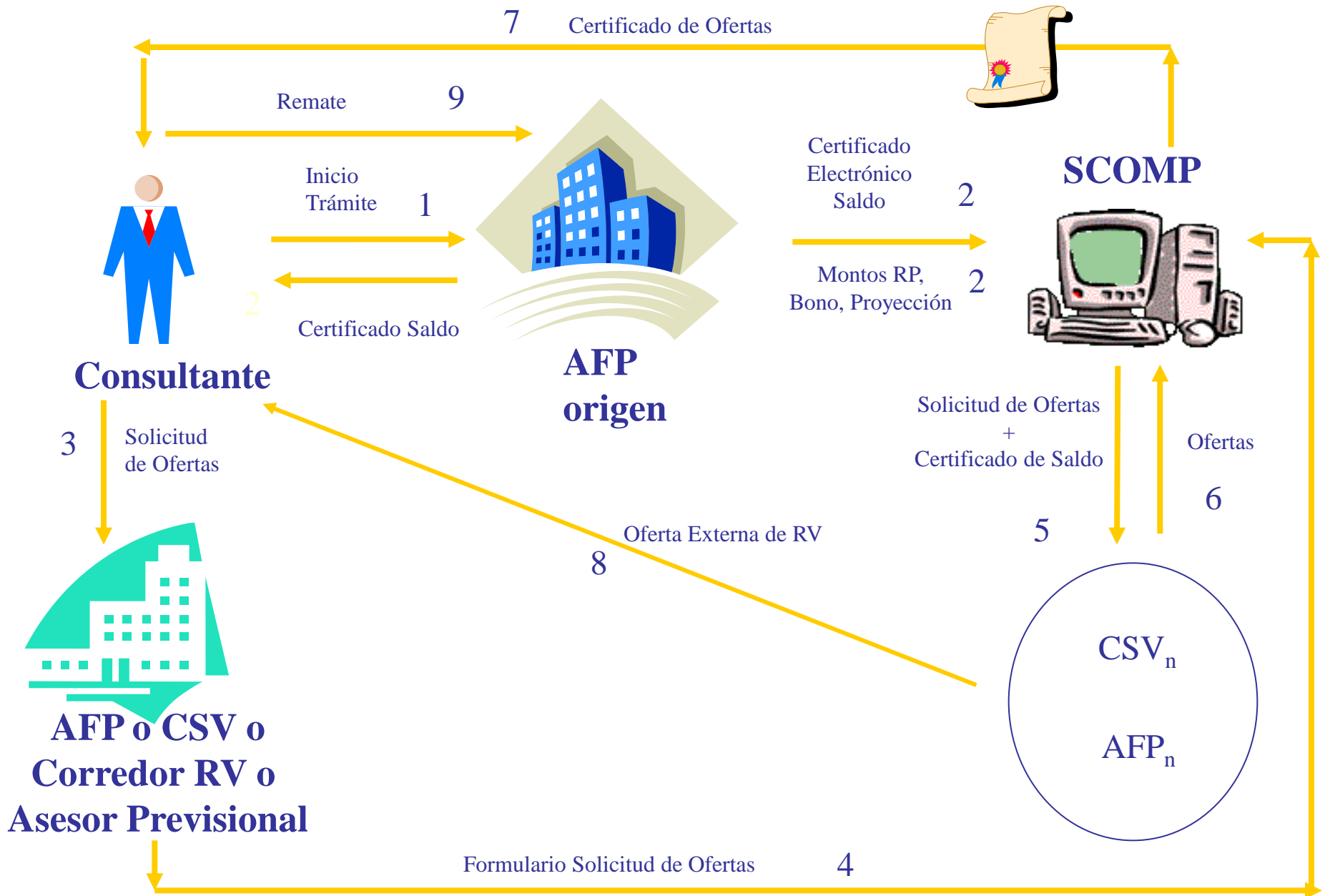
**Gradually increase in legal retirement age,
still a possibility for the future**

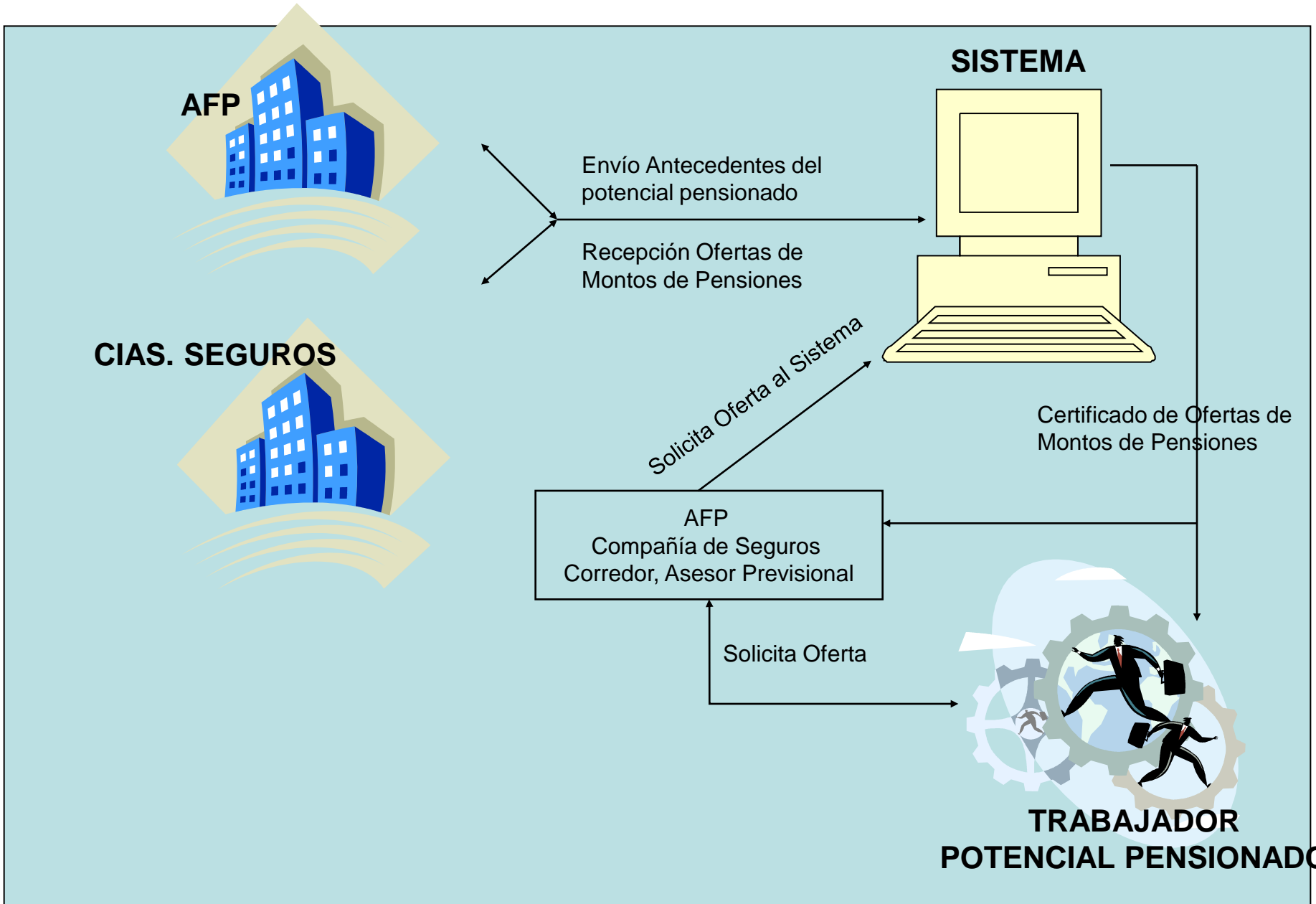
Diminish asymmetries of information, promote healthier competition reducing fees charged : the SCOMP system

- **Objective: promote a clear and comparable market for annuities and other retirement products**
- **Electronic market for Life Insurance Companies, Pension Fund Administrators, Brokers**
- **Blind quotation mechanism: each LIC compete for providing the best possible annuity to an unknown client**
- **Client can iterate (even organizing an auction among providers) or postpone decision (except in case of auction)**
- **Joint supervision: SVS - SAFP**
- **Started 19 de agosto de 2004.**

3. Diminish asymmetries of information, promote healthier competition reducing fees charged : the SCOMP system







Better risk-adjusted returns on assets

- More flexible approach focused on financial and operational risks. It should allow investments on more variable income instruments looking for a better risk-return profile
- Hedging instruments desirable
- Critical good governance of LICs
- Risk based capital requirements

Differed Annuity.

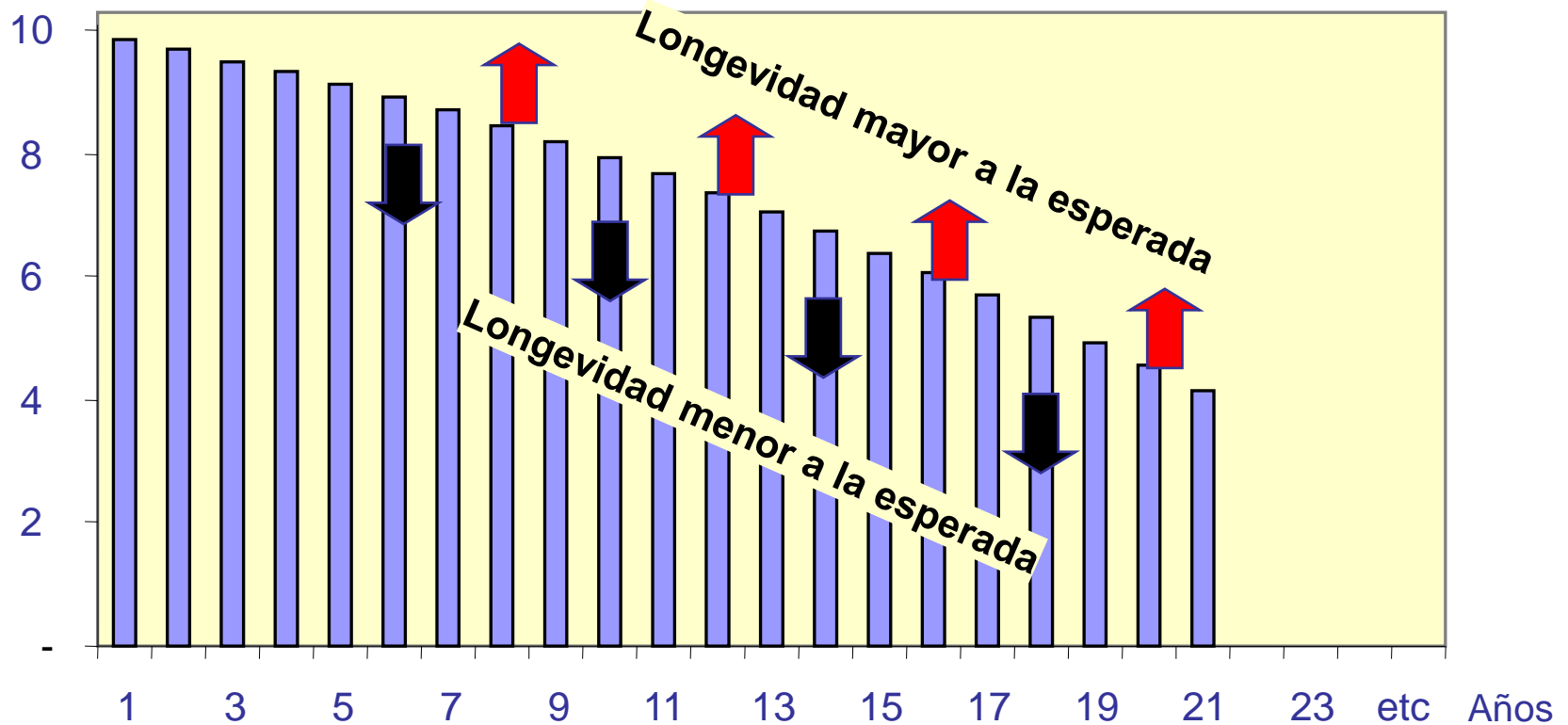
- It allows to fix the terms of an annuity during the working life period. This annuity, coupled with other pension products will consist in the final pension.
- It transfers longevity risk to the insurer
- It allows future pensioners to take advantage of good market conditions for buying annuities. It requires significant financial advise.

Inflation protection

- In Chile annuities are indexed to inflation measured by the Consumer Price Index
- Consumption bundle of retired persons eventually coincide with the average worker (relevant for CPI purposes) but it gradually moves significantly away from it as the person gets older
- The older the person, less relevant is CPI as relevant measure of inflation
- Challenge:
 - Create a Pensioner Price Index
 - Design a market for instruments linked to this: government, private companies (health institutions,...) including derivatives or outright subsidies

A longevity bond promises a yearly payment indexed to a mortality index which replicated the behavior of the pensioners

Pago del Bono
(CLP bn)



- LICs would obtain an instrument to hedge against longevity risk. Indexation could consider size of payments or maturity of the instrument
- Hedge is adequate, even though not perfect as it relies on average mortality, not LIC specific
- Issuer
 - Must have interest in exposing itself to this kind of risk
 - Derivative market desirable
 - Transfer longevity risk to a reinsurer.
- Calculation of official mortality tables critical: Which entity will do it? Public or private? How frequent?

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