A Sustainable, Variable Lifetime Retirement Income Solution for the Chilean Pension System

©Olga Fuentes, Richard Fullmer, and Manuel Garcia

IPRA Conference – Special online session
Financing Retirement in the 2020s and Beyond: The Global Experience
December 3, 2021

Disclaimer: *the views in this presentation are solely those of the authors and do not necessarily represent those of the Pension Regulator*

To discuss today

- An overview of the Chilean Pension System
- Evaluate the role of a tontine-like arrangement to improve pension pay-outs
  - Transparency
  - Investment flexibility
  - Higher expected income streams
  - Non-explicit guarantees
- Different proposals are analyzed
  - Simple tontine & deferred pension arrangements
  - Tontine-like solutions combined with existing pay-out products
- Implications & next steps

Overview: Chile's pension system

	1st Pillar: Solidarity Pillar	2nd Pillar: Mandatory DC	3rd Pillar: Voluntary
Objective	To prevent poverty	To smooth consumption between the accumulation and decumulation phase	To complement mandatory savings, improving the final pension
Funding	General taxes	Individual savings with tax exemptions	Individual savings with tax incentives and state matching
Benefits	A basic pension and a pension top-up to individuals with low or null participation in the pension system. Benefits are means-tested.	Depend on individual total final savings	Depend on individual total final savings

Source: Authors

Pension product selection for the pay-out phase

Pay-out phase products	total	women	men
Inmediate annuity	6%	4%	9%
Temporal rent + Deferred annuity	11%	7%	16%
PW by choice	24%	16%	33%
PW by default	58%	73%	42%
	100%	100%	100%

- Pension product selection is allowed only for those individuals able to self-financed a pension above the basic pension (PBS).
- The default for those with low balances is Programmed Withdrawal (PW)
- Some of them qualified for the Solidarity Pillar which gives them longevity risk coverage.

Challenges for the pay-out phase

- Increased longevity
- Decreasing interest rates
  - Someone retiring in 2020 received a pension benefit 40% lower than the same person retiring in 2000.
- Annuitization rates have historically been high relative to other countries, although this rate has been declining in recent years.

The Programmed Withdrawal (PW) is quite unattractive in many ways

- It gives you a high level of income early in retirement but this level is completely unsustainable.
- Absent any risk pooling →retirement income drops swiftly over time.
- Risk of out-living savings
- Pension adequacy is relevant not only at the time of retirement, but also in the long run.
- Retiree's financial situation becomes much worse at more advanced ages→ affecting more to women as they are likely to live longer and end life alone.
- Traditional investment withdrawal strategies are highly uncertain (longevity risk)

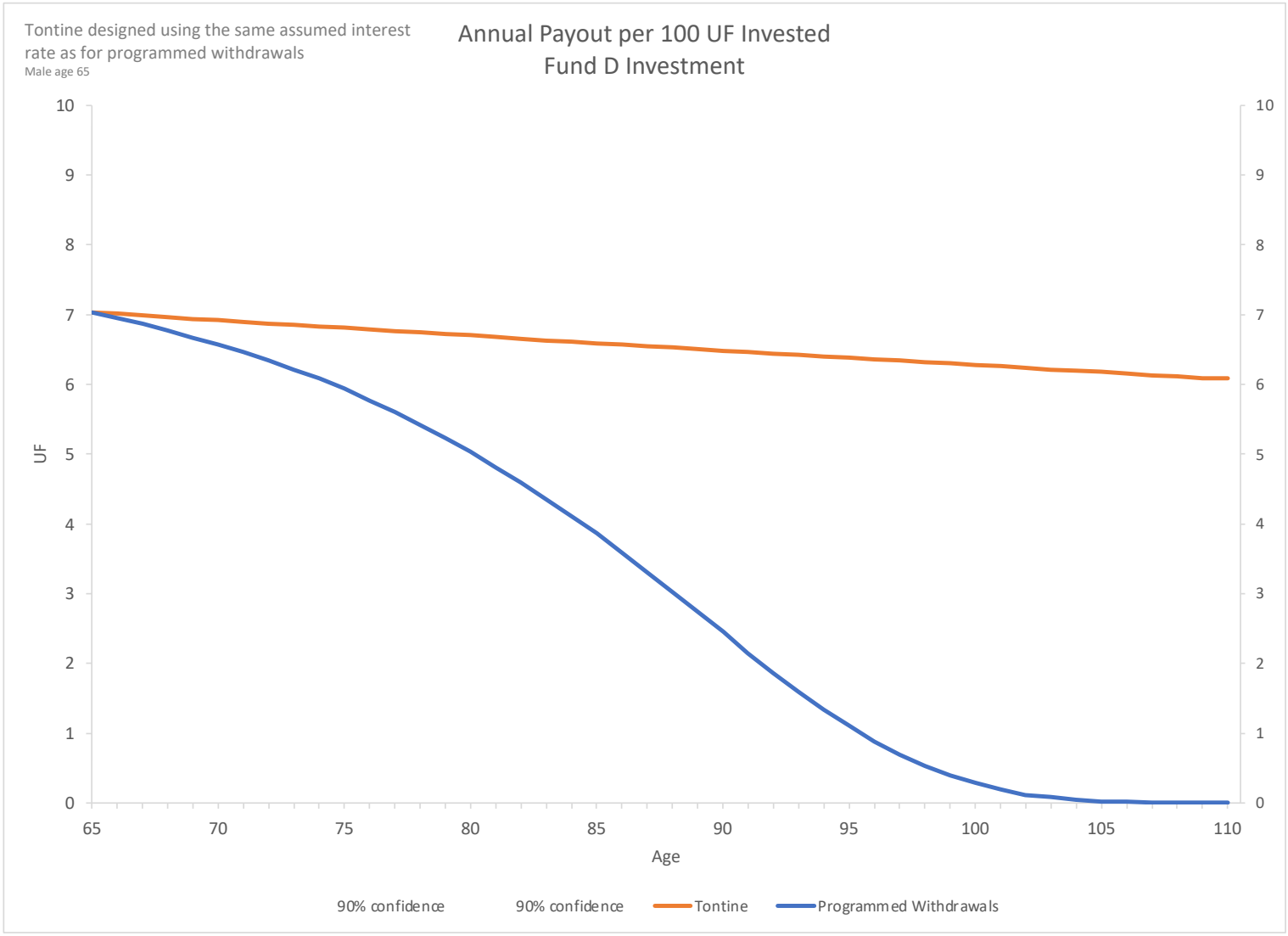
Our proposal: The tontine principle

- ✓ A longevity risk pooling arrangement, in which investors irrevocably:
  - Agree to pool their savings (or something of value)
  - Receive payouts while they are living
  - Forfeit their accounts upon death to the surviving members
- ✓ Two sources of returns:
  - Investment income
  - "Longevity credits" from the balances of members who have died
- ✓ Those who live longer receive greater cumulative payouts
- ✓ We can design tontines as a pension pay-out
  - Open-ended, continually accept new participants, running in perpetuity
  - Payouts designed to smooth consumption
- ✓ No explicit guarantees/actuarially fair/upside potential
- ✓ Offer choice: investment portfolio, payout features & can be combined with other pay-out options

Methodology

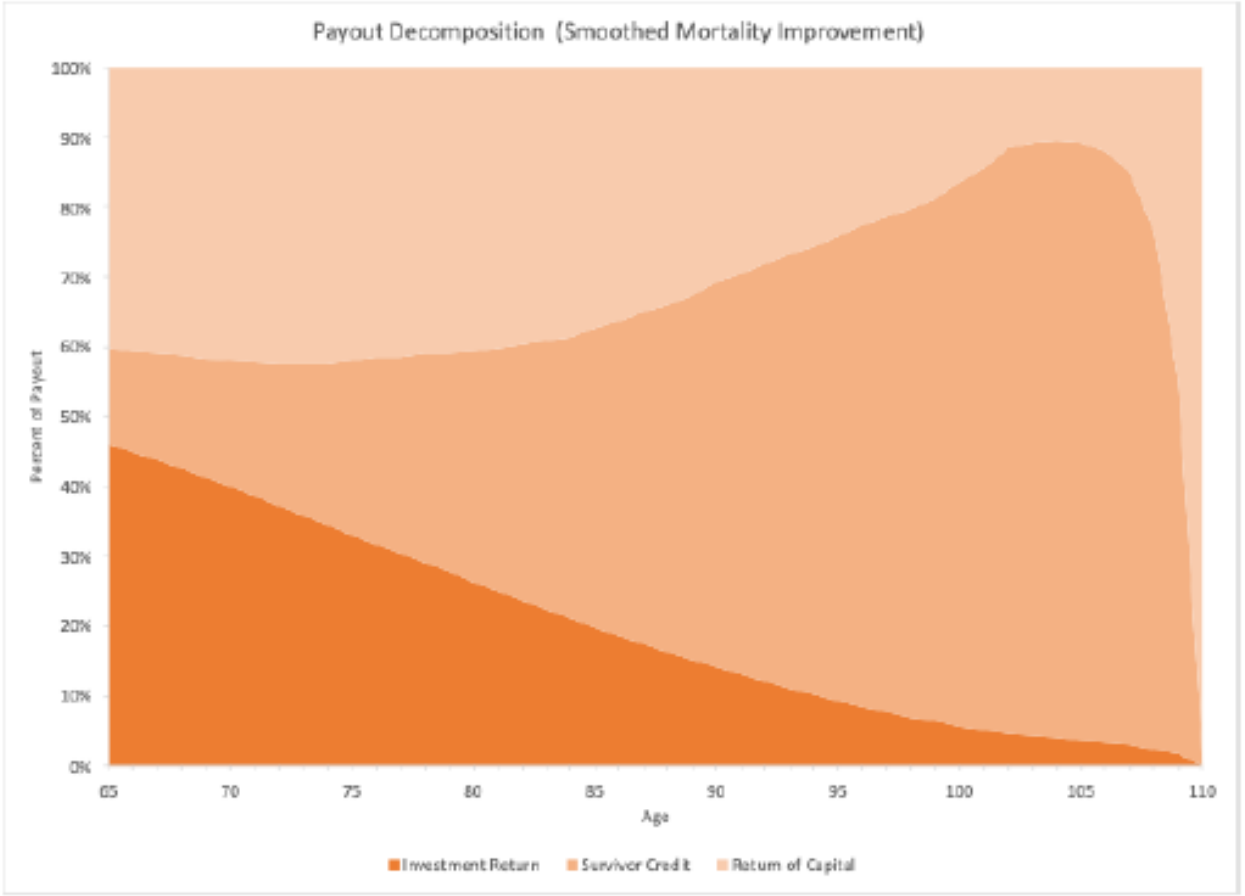
- We model an account-based, heterogeneous, open-ended tontine system:
- Operates on a set of individual accounts in which investors can make their own investment decisions
- Accepts members of different ages and genders
- Continually accepts new members, and runs in perpetuity
- We used Chilean mortality tables with improvement factors
- Membership size: 10.000 participants
- Each member who joins is randomly assigned parameters (gender, age, account balance)
- Age from 60 to 65 women, and 65 to 70 men.
- Account balance at retirement: value ranging from 1,000 UF to 10,000 UF (USD 38 th. to USD 380 th.)
- Investment options: fund C, D and E
- Monte Carlo simulation: 10,000 simulation runs, each run spanning the 55 years from 2021 to 2075.

Results: Programmed Withdrawal versus a tontine



The results as expressed as annual payouts per 100 UF invested, for a male who is 65 years old at the beginning of the year 2021 and elects to invest in Fund D.

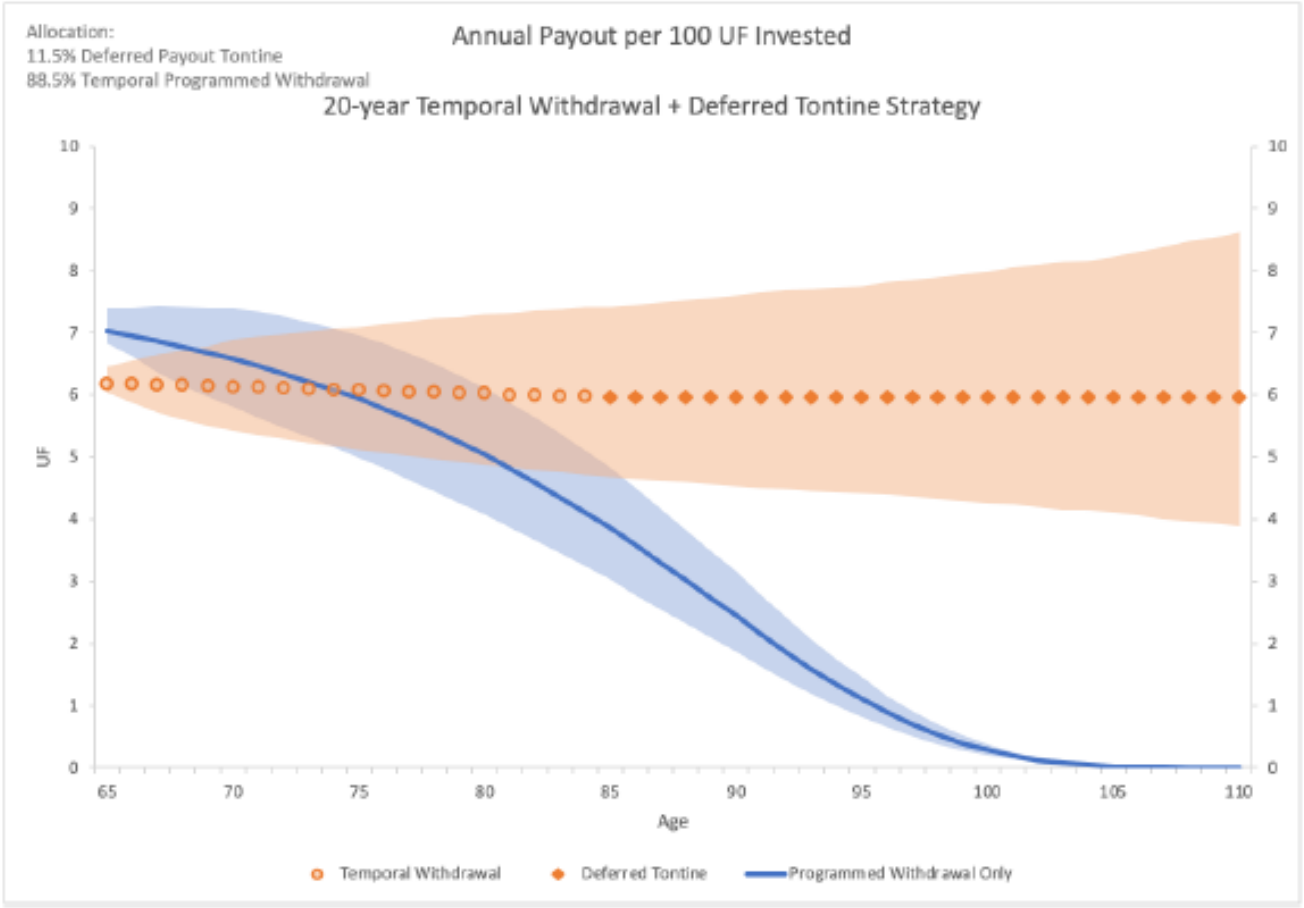
Payout decomposition: the contribution of mortality credits



Source: Authors estimates

Contribution of the survivor credits grows over time – it represents 14% of the payout at age 65 and rises to more than 80% of the payout by age 100. These credits are what provide the power to sustain the payouts into advanced ages.

Combined strategy: Payout of 20-year Temporal Withdrawals + 20-year Deferred Tontine versus Programmed Withdrawal

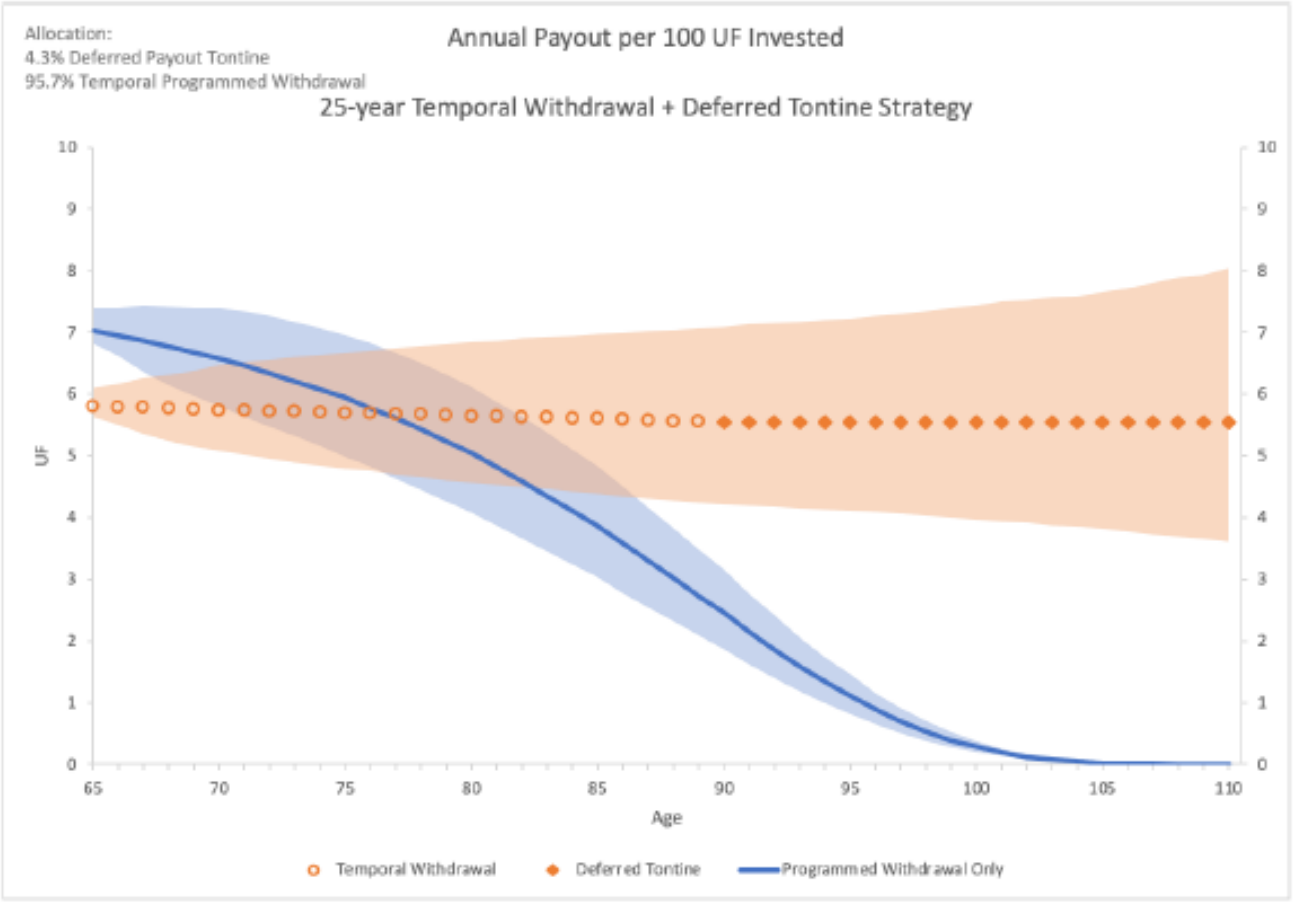


Source: Authors estimates

Investors sacrifice some of their retirement income in the first few years for the benefit of higher income later in retirement.

Only a small portion allocated to a deferred tontine (11,5%) can significantly improve payouts, indicating the relevant effect of the survivor credits.

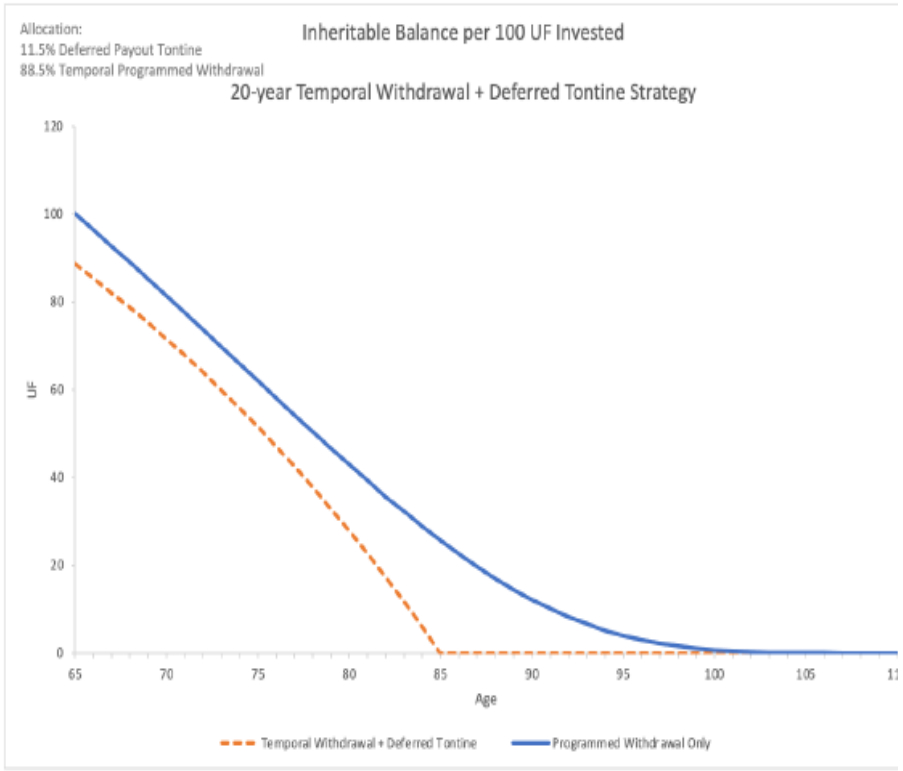
Combined strategy: Payout of 25-year Temporal Withdrawals + 25-year Deferred Tontine versus Programmed Withdrawal

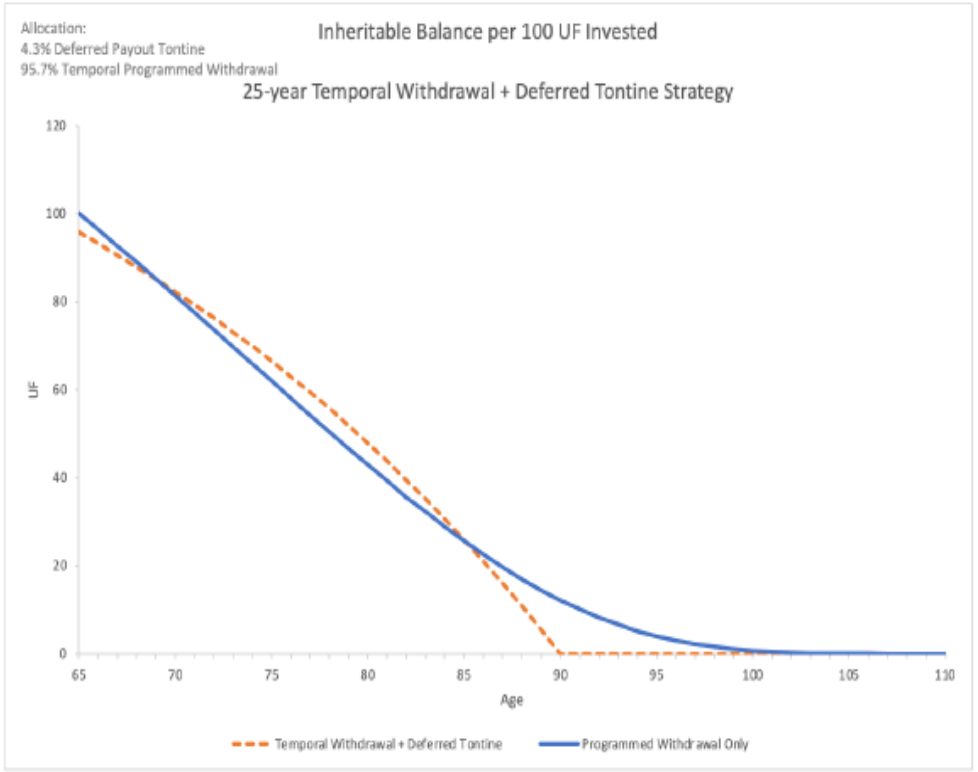


Source: Authors estimates

By making the deferral period longer, the longevity insurance provided by the deferred tontine becomes less expensive (4.3% of the investor's balance compared to 11.5%).

Combined strategy: Payout of 20-year Temporal Withdrawals + 20-year Deferred Tontine versus Programmed Withdrawal





The combined strategies may be appealing to those who A) wish to protect against dramatically falling income later in life and B) want to retain some ability to leave assets as a bequest.

The more money allocated to longevity risk sharing, the less that will be available for bequest.

Another way to alter the income/bequest trade-off is to use a longer or shorter temporal withdrawal horizon.

Lessons & Implications

- There is a need for pension systems such as in Chile to significantly improve the level, stability, and sustainability of pension payments as pensioners age.
- The solution should be not limited to increasing the take-up rate of annuities
- We compared income streams of various tontine designs with the payouts offered by the existing options
- Key results:

✓ Compared to PW, our proposal boosts income levels dramatically, even with a small allocation to it.

✓ These solutions may be combined with existing options to produce individually tailored income streams and satisfy bequest goals.

Lessons & Implications

- ✓ Our proposal offers a way to make a market for pension solutions that insurance companies might not be willing to offer (deferred products)
- ✓ A tontine solution would allow for a national longevity risk pool development- lower costs, create economies of scale, increase the level of risk diversification.
- Areas of innovation:
  - ➢ Investment strategy
  - ➢ Different levels of heterogeneity (life-expectancy differences among socioeconomic groups)
  - ➢ CDC and tontine-like arrangements: Easy to incorporate to our proposal a CDC feature (target payout, inter/intra transfers)

Thanks

Comments are welcome

A Sustainable, Variable Lifetime Retirement Income Solution for the Chilean Pension System

©Olga Fuentes, Richard Fullmer, and Manuel Garcia

IPRA Conference – Special online session
Financing Retirement in the 2020s and Beyond: The Global Experience
December 3, 2021

Disclaimer: *the views in this presentation are solely those of the authors and do not necessarily represent those of the Pension Regulator*