



**Actuaries  
Institute**

# Insights - Innovative Income Streams

Presented by  
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Retirement Incomes Working Group  
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# Agenda

- What's new?
- Different Products
- CIPRS
- Deferred annuities
- Innovative annuities

# What's new?

New SIS Regulation 1.06A permits tax free investment earnings after retirement

- “Deferred superannuation income streams”
- “Certain innovative superannuation income streams”, which allow payments to be contingent on investment returns and mortality experience
- Minimum drawdown rules do not apply to these products
- However, income payments may not be unreasonably deferred after they start.

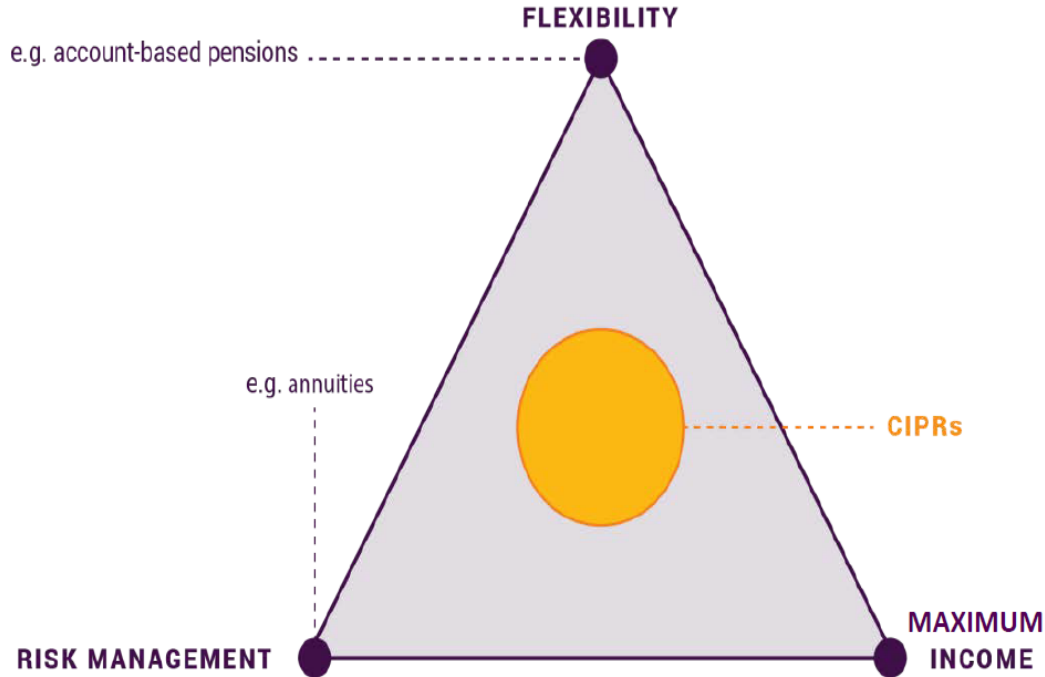
Streamlined cross agency process for seeking initial “concept exploration” or “product review” from ATO, APRA, ASIC and DSS

No changes in means tests - yet

# Different Products

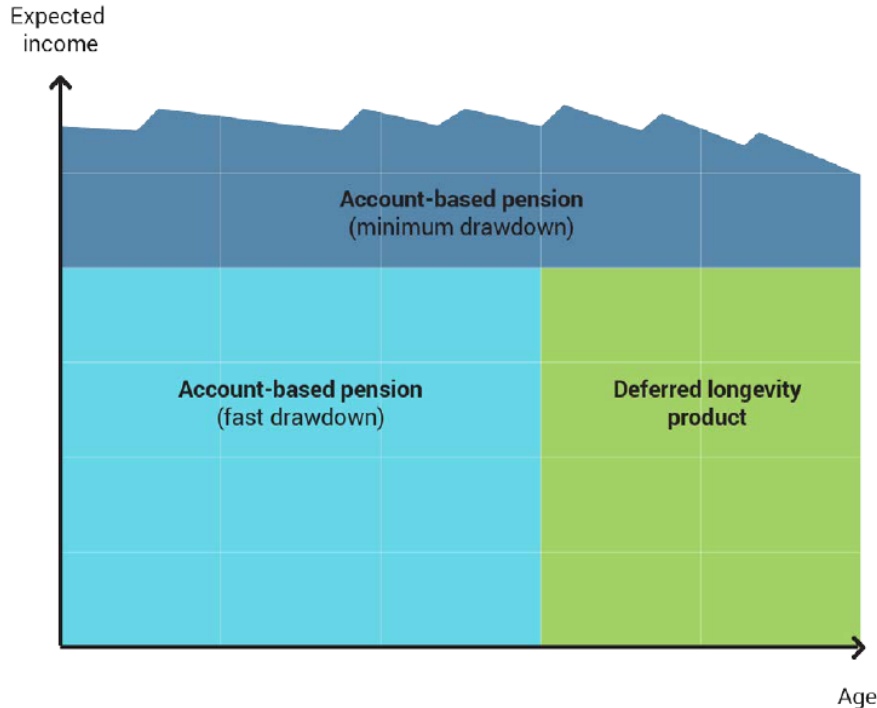
- Deferred annuities (“DA”)
  - DAs from a specific age
  - Contingent DAs after some event
- Innovative annuities
  - Group self-annuitisation products (“GSA”)
  - Investment linked annuities
  - With-profit annuities

# CIPRs balance income, flexibility and risk through combining products

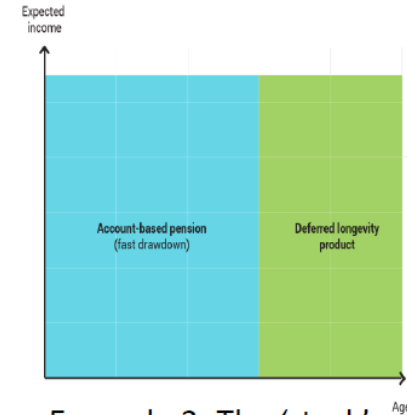


# Examples of possible CIPRs

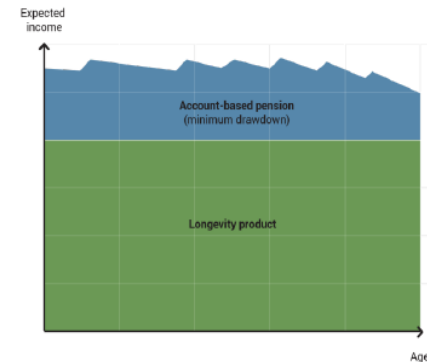
## Example 3: The 'wrap'



## Example 1: The 'cut'

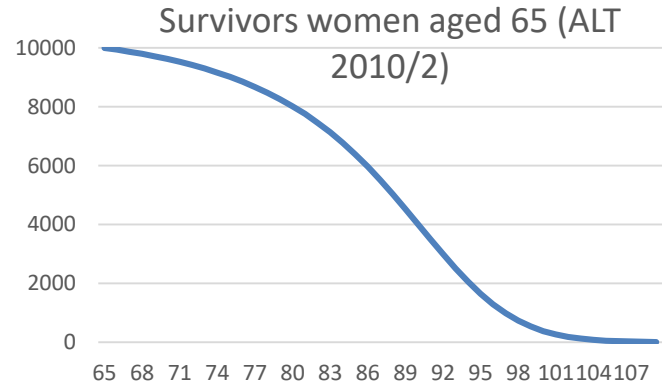


## Example 2: The 'stack'



# Deferred Annuities

- Pricing and Capital
  - Longevity trends
  - Selection uncertainty
    - Socio-economic
    - Temporary initial selection
  - Portfolio variability
  - Management action limited to raising new capital & information asymmetry with new capital providers
- Articulation issues when DLA starts





# Innovative annuities – design considerations

- Rules for determining:
  - Annuity payments
  - Sharing mortality and investment experience
- Withdrawal and death benefits
- Investment or mortality guarantees
- Charges
- Communication and RBE
- Legacy product issues

Trade off complexity with strict equity?

# How annuities work

- An annuity of \$1 pa is worth  $a_x$ 
  - $a_x = (1 + a_{x+1}) \cdot (1 - q_x) \cdot v$

- A survivor to the end of the year needs

$$- a_{x+1} = \underbrace{a_x \cdot (1 + i)}_{\text{Accumulation}} - \underbrace{1}_{\text{Payment}} + \underbrace{a_x \cdot (1 + i) \cdot q_x / (1 - q_x)}_{\text{Survival credit}}$$

# Group Self annuitisation

- Mortality is pooled
- Invest in unit linked fund – Hold  $U_x$  units at age  $x$
- Payment  $P$  units =  $U_x / a_x$ , paid out at prevailing unit price

- $U_{x+1} = U_x - P + U_x \cdot q_x / (1 - q_x)$

Units with a  
year's  
investment  
performance

Payment

Survival credit

- Redetermine payment  $P = U_{x+1} / a_{x+1}$

# Starting out

Initial assumptions for mortality, interest and inflation

- Mortality
  - Recognise different mortality groups, apart from age and gender
  - Allow for selection
  - Allow for mortality improvement
- Interest
  - Too low leads to rising payouts, advantaging the long lived
  - Anticipate the equity risk premium
- Inflation
  - Too low leads to payouts falling in real terms
  - Design to handle low and high inflation

# Investment and Mortality

Investment returns (Anticipated investment return – AIR)

- Real return of 1% pa on government stock
- Equity risk premium up to 6% pa?

Mortality experience

- Best guess at selection effects?
- Projection of improvements
  - 40 year rate much faster than longer term

Communication of risk essential

# Inflationary expectations

- Often underappreciated / misunderstood
- Inflation less 2% is robust to changes in inflation, but not:
  - 75% of inflation, or
  - Inflation with a maximum of 5%
- Consumption declines throughout retirement
  - Although considerable heterogeneity
  - Little understanding of out-of-pocket medical and care costs, but not as bad in Australia as USA

# Distributing survivorship credits

- Each survivor needs  $S_x = U_x \cdot q_x / (1 - q_x)$  to maintain expected payout, in units, not \$
- Use expectations from start of year – not from inception
- There will be a shortfall or surplus of the balances forfeited by the deaths over  $\sum S_x$
- It could be distributed in proportion to  $S_x$  or another way.
- Can lead to identical increases/reductions to annual payments if distributed in proportion to  $U_x$
- Fair for each person if the amount they expect to lose on death = the amount they expect to gain on survival

# Capitalizing assumption changes?

Payment P units =  $U_x / a_x$ , paid out at prevailing unit price

New assumptions for  $a_x$  for existing business

- Causes step changes in payouts
- Adding volatility if changes are subsequently reversed

Keeping out-of-date assumptions leads to:

- Expectation of ongoing reductions or increases in payouts
- Inconsistencies (if new business based on different initial assumptions)
  - Either unfair survival credits
  - Or differences in changes to annual payments



# Charges – expenses and profits

Very long term contracts need to protect both sides

- Ability to increase expense fees for inflation, regulatory changes, small volume portfolios
- Protection against opportunistic changes to investments, distribution rules and increases in charges

Provision for closing of legacy products with appropriate transfer?

Limit charges to current plus inflation and statutory charges

# Managing legacy products

## Investment returns

- Unit pricing rules applicable
- Smoothing
  - Minimise discretions and risk of expropriation
  - Be robust to long periods of underperformance
- Dynamic hedging and option strategies may create systemic risks

## Mortality experience

- Minimum size rules
  - Can reinsure as reverse level term insurance with short term rate guarantees
  - What level of volatility acceptable?
  - Note temporary initial selection will mean very few deaths at start up
- Have to allocate deviations from experience to pool
  - Should relate to age and other factors used in “pricing”
  - Distribution of deviations can be in proportion to  $q_{[x]+t}$  or balance and still be fair

# Investment Linked Annuities

- An annuity expressed in units not \$
- Longevity insured, investment performance not insured
- Policy expenses are based in \$
- Capital needed to protect against the risk of great investment performance

Suggestions to the RIWG:

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