Overview

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• The paper is organised as chapters headed:
  • Introduction
  • The problems of draw down as an alternative to annuity purchase
  • Supply side issues
  • Demand side issues
  • Tax factors
  • Policy intervention: annuitised funds
  • The working of annuitised funds and differential mortality
  • Conclusion and further work
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• Funding support was provided by my employer, the Ministry of Social Development; however, all views and opinions expressed here and in the paper are my own and do not reflect Ministry views or Government policy
Introduction

Two principal observations

1. Most working age people, in modern industrial societies, principally manage their finances by reference to their direct and regular income from labour

2. Nobody knows when they will die
Asset decumulation: optimising income needs for retirement

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1. Most working age people, in modern industrial societies, principally manage their finances by reference to their direct and regular income from labour

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And some caveats

The role of non-financial support, from families and the wider community, is not considered

The focus is on individuals; the diversification that couples can benefit from is ignored here
Introduction

Why is there an issue?

1. Numbers of retirees coming on stream

2. Shortfalls in projected levels of occupational pension income

3. NZS inadequacy in replacement rate terms
Asset decumulation: optimising income needs for retirement

Introduction

Increase in population aged 65 by year, New Zealand 1937-2051 (Statistics NZ)
Asset decumulation: optimising income needs for retirement

Introduction

Projected private pension payments to the 65+ population, in 2004 $ (own calculations)
Introduction

NZS inadequacy in replacement rate terms

- A measure of adequacy in replacement rate terms is that post-retirement income be around 70% of pre-retirement income
- The OECD average replacement rate from mandatory schemes for the average earner is around 60% (*Pensions at a Glance, 2007*)
- Paper gives a crude estimate that in respect of income for the 50-65 age group, NZS provides about 45% of pre-retirement income at the median (and hence less for above median earners)
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• Paper gives a crude estimate that in respect of income for the 50-65 age group, NZS provides about 45% of pre-retirement income at the median (and hence less for above median earners)

Caveat: meaningful discussion on replacement rates needs to take into account such matters as living arrangements (particularly whether partnered or living alone) and housing arrangements (particularly whether mortgage free or paying rent)
Asset decumulation: optimising income needs for retirement

Draw down v longevity insurance

Some problems with draw down

• Transaction costs of individualised investment holdings

• Importance of good advice

• Exposure to family pressure

• Exposure to being taken advantage off

Asset decumulation: optimising income needs for retirement

Drawdown v longevity insurance

Comparison of annualised real return from draw down and annuity; age 65, NZ Life tables 2000-2002 All Males (e_x=16.7)
<table>
<thead>
<tr>
<th></th>
<th>Early death</th>
<th>Prolonged life</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Longevity insurance</strong></td>
<td>Benefit goes to other participants in the insured pool</td>
<td>Participant benefits through maintained income</td>
</tr>
<tr>
<td><strong>Draw down</strong></td>
<td>Benefit goes to the heirs</td>
<td>Family or children need to provide support</td>
</tr>
</tbody>
</table>

Contrast of longevity insurance and drawdown: Andrei Andreianov, private communication
Annuity supply side issues

- Levels of uncertainty about future patterns of longevity that were not present a number of years ago – you can pool idiosyncratic risk, but not systemic risk
- Limits on the availability of matching assets to minimise investment risk, particularly the case in New Zealand
- Possible mis-alignment of taxation regimes
- Lack of demand putting pressure on expense loadings - particularly where economies of scale are needed
- Increased attention to prudential reserve requirements by regulators (not unreasonably), in conjunction with shareholder demands for appropriate return on at-risk capital, putting pressure on pricing
Annuity demand side issues (1)

- Need felt for precautionary savings, with uncertainty as to what levels are necessary, and a sense that income being received (including NZS) insufficient for savings to be made
- The wish to have the ability to make bequests (although there may be some expectation of receipt as well)
- In addition to the above, there may be a wish to have control and not hand money over to unknown and/or mistrusted financial service providers
- Annuities may be seen as poor value for money, due to unrealistically low expectation of life, poor implicit returns, low levels of regulation, and a perception of high charges
Annuity demand side issues (2)

- A perception of poor value for money will also be the case where one has knowledge that one has poorer or even average longevity prospects, if special terms are not available.

- The need to actually plan to buy an annuity leads one directly to contemplate one’s death, which may be anxiety provoking.

- There will be a disinclination to take a lower CPI indexed pension compared to a higher fixed pension, despite its probably better fit.

- The greater visibility of annuity income may make it unattractive if there is some real possibility of otherwise qualifying for means tested benefits.

- NZS and/or family support may be perceived as mitigating the need for longevity insurance.
Public policy issues

• Significant economic inefficiency of draw down in the absence of longevity insurance:
  • people to have to hold higher than necessary assets, or
  • have lower incomes in retirement

• Noting that managing financial assets rather than income is not what people are mostly used to, the potential under individual wealth management methods such as draw down to:
  • “waste” savings through short-term attitudes to consumption
  • high transaction costs
  • exposure to fraudster activity

• The perverse incentive to spend assets early in order to avoid income-testing of welfare benefits – esp residential care subsidy

• The behavioural issues in getting people to do what would, on a reasonable assessment, optimise their welfare
Asset decumulation: optimising income needs for retirement

Options
Asset decumulation: optimising income needs for retirement

Options

1. Continue to rely on life insurance companies to provide annuities
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   • need to do more than fix tax
   • issues of uncertain longevity, regulation, costs, investment
Asset decumulation: optimising income needs for retirement

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3. Facilitate annuitised funds
Asset decumulation: optimising income needs for retirement

Options – what is an annuitised fund?

An annuitised fund is “one where each cohort of participants shares the mortality risk, as well as each individual bearing their investment risk” Daykin, C. 2004: “Annuities and alternative ways of providing retirement income”, IACA, PBSS and IAAust colloquium, Sydney.


Asset decumulation: optimising income needs for retirement

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3. Facilitate annuitised funds
   - appear best placed to offer flexibility
   - most likely to address demand issues
   - but will need some Government support
     - systemic longevity risk re-insurance
     - cleaned-up tax treatment
     - interaction with social security sorted
     - believable regulation
     - exit options
Asset decumulation: optimising income needs for retirement

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Simulation of annuitised fund operation

Basis

- new entrants males aged 65
- each contributes $100,000 initial payment
- assumed CPI 2% pa
- assumed investment return 6.5% pa after tax
- basic mortality assumed as NZLT 2000-2002 with cohort improvement estimated by 0.33% compound decrease in $q_x$ values ($e_x = 17.0$)
- start with 1,000 lives for each simulation run

- allow mortality to vary stochastically while holding other factors as per assumptions
Simulation of annuitised fund operation

Operation using repricing model

- initial pension calculated on basis of assumptions
- at end of each year, calculate asset share as opening share plus “interest” less payments less expenses
- “interest” is the assumed rate of return on assets plus the asset shares from those dying in the year
- pension for next year based on original pricing assumptions applied to asset share
Simulation of annuitised fund operation

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Purpose

- show amount of pension for a number of simulation runs, to give sense of variation in outcomes
- explore what happens if some proportion of the lives have expected mortality different from that assumed in the pricing assumptions
Simulation of annuitised fund operation

An alternative approach is:

- continue the initial pensions of the survivors (no re-pricing)
- index each year by the assumed CPI rate
- monitor the surplus/deficit of the annuitised fund

However, investigation (given in the paper) showed this to be less robust in terms of extent of variation
Asset decumulation: optimising income needs for retirement

Simulation of annuitised fund operation

Alternative mortality bases

- for high mortality, assumed $q_x$ values 55% higher with no cohort change
- for low mortality, assumed $q_x$ values 33% lower with no cohort change

Results

<table>
<thead>
<tr>
<th>Mortality assumption</th>
<th>Basic period table</th>
<th>Lower mortality</th>
<th>Higher mortality</th>
<th>Cohort improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial pension $e_x$</td>
<td>$9,053 pa</td>
<td>$8,063 pa</td>
<td>$10,514 pa</td>
<td>$8,954 pa</td>
</tr>
<tr>
<td></td>
<td>16.7</td>
<td>19.8</td>
<td>13.6</td>
<td>17.0</td>
</tr>
</tbody>
</table>
Simulation of annuitised fund operation

Homogeneous: numbers

Fund participants by age, 20 simulations of 1000 entrants
## Simulation of annuitised fund operation

### Homogeneous: numbers

<table>
<thead>
<tr>
<th>Age</th>
<th>80</th>
<th>85</th>
<th>90</th>
<th>95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>594</td>
<td>386</td>
<td>185</td>
<td>56</td>
</tr>
<tr>
<td>Highest</td>
<td>627</td>
<td>410</td>
<td>204</td>
<td>67</td>
</tr>
<tr>
<td>Lowest</td>
<td>579</td>
<td>360</td>
<td>159</td>
<td>40</td>
</tr>
<tr>
<td>Highest, % of average</td>
<td>105.6%</td>
<td>106.2%</td>
<td>110.4%</td>
<td>119.7%</td>
</tr>
<tr>
<td>Lowest, % of average</td>
<td>97.5%</td>
<td>93.7%</td>
<td>86.0%</td>
<td>71.5%</td>
</tr>
</tbody>
</table>

Dispersion of simulation results: participant numbers at selected ages from 1,000 entrants at age 65, 20 simulations
Asset decumulation: optimising income needs for retirement

Simulation of annuitised fund operation

Homogeneous: pension amounts

Pension amounts by attained age, 20 simulations of 1000 entrants
Asset decumulation: optimising income needs for retirement

Simulation of annuitised fund operation

Heterogeneous: pension amounts

Pension amounts by attained age, 20 simulations of 1000 entrants, 10% participants having low mortality
Asset decumulation: optimising income needs for retirement

Simulation of annuitised fund operation

Heterogeneous: pension amounts

Pension amounts by attained age, 20 simulations of 1000 entrants, 30% participants having low mortality
Simulation of annuitised fund operation

Heterogeneous: pension amounts

Pension amounts by attained age, 20 simulations of 1000 entrants, 10% participants having high mortality
Simulation of annuitised fund operation

Heterogeneous: pension amounts

Pension amounts by attained age, 20 simulations of 1000 entrants, 30% participants having high mortality
Conclusions

Interventions

• need a basis for risk classification of population sub-groups
• suggests a state agency to determine tables according to risk classification and revise annually
• central government agency to administer, with investment out-sourced to private sector (one set of well-defined operational rules)
• Government as reinsurer, perhaps on a stop-loss basis, charging a premium
• non-neutral tax treatment? (May be needed to deal with social security interface)
Conclusions

Other matters arising

• recognition of disparities in mortality may have implications for discussion of eligibility age for NZS
• what are the implications for joint lives?
• where (if at all) does home equity conversion fit into this?
• need some more work on replacement rates in relation to living arrangements and housing
• the elephant in the room – should annuitised funds be gender-specific or gender-neutral?
Conclusions

Some suggested reading


