The Longevity Risk

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• How long will we live?

• An uncertainty that we all deal with
  • Emotionally, and also ...
  • Financially

• We hope to live a long, healthy life. Many people buy life insurance to protect their families if they die early.
Poll #1: At what age should you stop being covered by life insurance?

(Assumptions: married, with kids, term insurance)

1. 50
2. 55
3. 60
4. 65
5. 70
6. 75
Financial consequences of mortality / longevity

- There are financial consequences of dying early
- And there are also financial consequences of living a long time
  - We like living a long (healthy) life
  - But it’s expensive!
- Longevity risk: individual level and the aggregate level
- How should individuals handle idiosyncratic risks?
  - Life insurance
  - Life-contingent retirement income stream
- How should pension funds, insurance companies, and others handle aggregate risks?
  - Longevity swaps or other securities?
Bad News: People Are Living Longer; Just Ask AT&T, IBM, GM

by David J Lynch
February 9, 2015
Annuitization

• Economists have argued that annuitization / provision of lifetime income provides needed protection against outliving one’s assets

• But annuitization is on the decline
  • Changing pension landscape
  • Tendency to take a lump sum when offered
Transformation of the pension landscape

Implications for lifetime income

• Pension transformation $\rightarrow$ large decline in annuitization

• And, when people are given the choice they tend to opt for a lump sum rather than an annuity
The annuity puzzle: most prefer cash in hand to annuity payout

- **DB plans**
  - Plans increasingly give retirees a lump sum option
  - Retirees generally take the lump sum option *when it is offered*
    (Banerjee 2013: only 27% of the dollars remain annuitized)

- **DC plans**
  - Few plans offer annuitization
  - Take-up for those that do is relatively small
  - UK annuitization was high because it was mandatory. Likely to shrink now that it is optional

- Few individuals purchase annuities outside of their retirement savings plan
  - When annuities are purchased, they almost always include guarantees (period length, principal refunds, …)
Poll #2: Why are annuitization levels so low?

1) Individuals don’t value insurance against longevity – there’s nothing we can or should do to change this

2) Individuals don’t like certain features of annuities, but would be open to improved products

3) Individuals are biased away from annuities by the way choices are presented, and an improved choice architecture would change outcomes

4) Individuals already get enough annuitization through Social Security

5) Some other reason
## Economic and psychological barriers to annuitization

<table>
<thead>
<tr>
<th>Economic</th>
<th>Psychological</th>
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<tbody>
<tr>
<td>Lack of liquidity in face of shocks</td>
<td>Loss of control</td>
</tr>
<tr>
<td>Counterparty risk</td>
<td>Complexity of annuity choice</td>
</tr>
<tr>
<td>Pre-existing annuitization (Social Security)</td>
<td>Annuities feel like a gamble instead of insurance</td>
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<td>Payout profile may not match preferences</td>
<td>Difficulty handing over large lump sums</td>
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<tr>
<td>Expense (Adverse selection / fees)</td>
<td>Regret</td>
</tr>
<tr>
<td>Bequest motives</td>
<td>Perceived as all-or-nothing</td>
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<tr>
<td>Within-family risk sharing</td>
<td>Problems comparing present lump sum to future flows</td>
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Annuities don’t feel like insurance: Reason #1

With standard insurance, when something bad happens...
• House burns down
• Vacation cancelled
• Primary earner dies early
• iPod breaks
...I receive more (insurance payment)

With a life annuity, when something bad happens
• (die early)...
... I receive less (no more annuity payments)
Annuities don’t feel like insurance:
Reason #2

• Typical insurance (e.g. homeowners, life)
  • Pay a small amount each year
  • Receive a large amount all at once

• Annuity
  • Pay a large amount up front
  • Get a small amount each year
Bequest motives

• Even with bequest motives, people should want annuities
  • Separates size of bequest from how long person lives

• Perhaps this is not what people want?
  • Do heirs prefer to receive more payments when parents die early than when die late?
  • Is leaving a legacy more important if someone dies young than if they die old?
  • Raises fundamental questions about insurance: payoffs when low wealth or payoffs when feel bad?
A project to tackle questions on annuitization

• Research team
  • John Beshears, Harvard University
  • James J. Choi, Yale University
  • David Laibson, Harvard University
  • Brigitte C. Madrian, Harvard University
  • Stephen P. Zeldes, Columbia University
• Designed an internet survey
  • 5000 U.S. residents, aged ~ 50-75, paid for participation
  • August 2011 - June 2012

• Offered hypothetical choices between lifetime income stream and a lump-sum payout

• What we investigated
  • How much did people annuitize?
  • What factors did people say were important to them?
  • Effect of all-or-nothing vs intermediate options?
  • What is the desired slope of retirement income?
  • Does framing influence choices?
What we found

• What do people say is important?
  • Obstacles: loss of flexibility/control, counterparty risk
  • Motivations: ensure late life income

• Allowing partial annuity option (rather than all or nothing) increases annuitization

• COLAs
  • Individuals do not want declining real income paths
  • Highlighting inflation increases COLA take-up rates

• Framing influences choices
  • Flexibility and control
  • Investment
  • But not: good deal, total income, longevity insurance, mortality credits
### Impact of allowing partial annuitization

<table>
<thead>
<tr>
<th></th>
<th>All or Nothing</th>
<th>Partial Annuitization</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects choosing any annuitization</td>
<td>50.2%</td>
<td>80.0%</td>
<td>---</td>
</tr>
<tr>
<td>Dollar-weighted annuitization rate</td>
<td>50.2%</td>
<td>57.3%</td>
<td>0.008</td>
</tr>
</tbody>
</table>

- Allowing partial annuitization increases:
  - Fraction of people taking any annuitization
  - Average percent of wealth annuitized
What payout slopes do people want?

-2% Real Growth (0% Nominal Growth) - 19%
0% Real Growth (2% Nominal Growth) - 32%
2% Real Growth (4% Nominal Growth) - 50%

Individuals dislike declining real pension payouts
If the cost of living increases by 2% per year for the rest of your life and you don’t have a cost-of-living adjustment, your monthly pension payment will buy 33% fewer goods and services at age 85 than it does at age 65.
Framing effects: Does changing the language alter annuitization choices?

• Framing Treatments
  • Minimal Framing (F1) ❌
  • Good Deal (F2) ❌
  • Total Income (F3) ❌
  • Investment Framing (F4) ✔ -5.6%
  • Flexibility and Control (F5) ✔ -8.4%
  • Longevity Insurance (F6) ❌
  • Mortality credits (F7) ❌
Our research agenda

• **What are the barriers to annuitization?**
  • economic and psychological

• **Develop theory**
  • model that captures advantages and disadvantages of annuitization

• **Collect and analyze data**
  • internet survey
  • actual annuitization choices, in both DB and DC settings

• **Improve “choice architecture”**
  • to remove potential biases away from annuitization
  • under construction: web tool for annuitization decisions by workers

• **Design new products**
  • provide “longevity protection” that appeals to individuals

• **Examine outcomes**
  • changes in participant behavior
Interested in partnering with us?

• We’re looking for
  • DC plan sponsors
  • DB plan sponsors
  • Record keepers
  • Asset managers
  • Insurance companies
Reducing regulatory barriers to annuitization: Two recent Treasury announcements

1) Longevity annuities (QLAC) and RMDs - July 2014
   • $ put into deeply deferred annuity (e.g. 85) don’t require RMD

2) Annuities blended into Target Date Funds (QDIA) - Oct 2014
   • Target date funds that roll over into annuity can be QDIA

Goal: encourage products that provide longevity protection within tax-favored retirement wealth

Torn from the headlines...

**The New York Times**

ANNUITIES

**Longevity Insurance Joins the Menu of Retirement Plan Options**

By TARA SIEGEL BERNARD  JULY 1, 2014

New tax rules will make it possible for workers to buy a type of annuity often called longevity insurance inside their retirement plans. The annuity aims to protect people from exhausting their savings in their later years.

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**MarketWatch**

Will you need a ‘longevity’ annuity in retirement?

By Glenn Ruffenach

Published: Jan 12, 2015 12:27 p.m. ET

The pros and cons of so-called longevity insurance
Cumulative survival probabilities for a 65 year old male in 2015

Data source: Social Security cohort life tables, 2005
Present value of real $1 single-year payout, conditional on survival

the cost today of providing a $1 real payout in the event a 65 year old survives to 90 costs is only 17 cents

Assumptions: male turning 65 in 2015, 1% real interest rate, 2005 Social Security cohort life tables
Longevity Insurance
(Deferred annuities beginning at older age)

• Pros
  • Requires much less money up front
    • Ties up less liquidity
    • Psychologically easier to give up lump sum
  • It feels more like insurance

• Cons
  • Payments are even further into the future
    • Greater concerns about counterparty risk
    • Psychologically difficulties envisioning distant future
  • Inflation risk
Challenges for the DC market

• How to design a product that blends with a DC plan to provide longevity protection

  • Low default risk
  • Cost effective
  • Some liquidity
  • Transparent
  • Comparable
  • Portable

Competition
• Products that provide additional liquidity lead to greater problems with adverse selection
Aggregate longevity risk

• Idiosyncratic risks can be pooled and therefore diversified by pension funds, insurance companies, ...

• But that still leaves *aggregate* longevity risk

• Uncertainty and disagreement about future mortality trends

• Should pension funds hedge longevity risk?
  • Important to think about liabilities when thinking about asset allocation

• Do insurance companies have a natural hedge?

• Is this risk appropriate for the capital markets?
  • Correlations with other risks?
  • Interesting asset class?
Longevity risk

My money or your life

New financial instruments may help to make pension schemes safer

Aug 23rd 2014

OVER the past 50 years, every forecast of how long people will live has fallen short. Despite fears that obesity and global warming would reverse the trend, life expectancy in rich countries has grown steadily, by about 2.5 years a decade, or 15 minutes every hour (see chart). That is good news for health-care providers, cruise companies and (on the whole) humanity. It is most unwelcome for those paying the bills to finance this extended lease on life.

Longevity risk, the chance that people will live longer than expected, is potentially very expensive. Never mind the dramatic impact of a cure for cancer: adding an extra year to the average lifespan increases the world’s pension bill by 4%, or around $1 trillion, according to the IMF.
ScottishPower completes longevity swap for pension fund

By: Sophie Baker
Published: February 9, 2015

ScottishPower U.K. PLC completed a longevity insurance swap with Abbey Life Assurance Co., a Deutsche Bank subsidiary, for its ScottishPower Pension Scheme, Lanarkshire, Scotland.

The deal covers about £2 billion ($3 billion) of liabilities for the £2.5 billion defined benefit fund, covering about 9,000 members and dependents, said a statement by ScottishPower. ScottishPower is a subsidiary of Iberdrola SA.

The longevity insurance swap removes the risk of increases in liabilities for the pension fund, should members live longer than expected.
Conclusion

• Longevity risk is important

• Lots more to learn about
  • Individual and aggregate longevity risk
  • Integration with life insurance

• Plenty of scope for
  • Research – combining economics and psychology
  • Improved product design
  • Improved choice architecture