Informed intermediation of longevity exposures

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Agenda

1 Motivation
2 Buyout market
3 ILS market
4 Conclusion

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Motivation: longevity hedging demand/supply

Insurance markets have very limited capacity
  - DB schemes / annuity providers have longevity risk exposures roughly 30x larger than insurance industry’s exposure to mortality deterioration

Longevity space attractive to investors
  - ILS funds, endowments, investment banks, (re)insurers, etc.

Information market is developing
  - bespoke mortality tables, postcode analysis, credit history, granular underwriting data (life settlements)
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2. Buyout market
3. ILS market
4. Conclusion
The pensions buyout market

- less informed
  - pension funds

- more & less informed
  - higher capital requirements
  - buyout firms (re)insurers, banks

- (re)insurers

- capital markets (ILS funds etc.)
Capital/information differentials

Motivation
Buyout market
ILS market
Conclusion
Transferring a survival rate, 
\[ S = \frac{1}{m} \sum_{i=1}^{m} 1_{\tau_i > T} \]
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\[ S = \frac{1}{m} \sum_{i=1}^{m} 1_{\tau^i > T} \]
Bulk buyout / pool and transfer

Motivation

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ILS market

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The ILS market

- more informed
- high capital requirements

- less informed

• pension funds
• (re)insurers
• capital markets (ILS funds, etc.)
• buyout firms (re)insurers, banks

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Optimal security design

Transferring $S$ to the capital markets

- intermediary retains part of the exposure to ‘signal’ the quality of the cashflows to the investor
- risk-sharing in securitization, quota-share reinsurance

Write a contract on the exposure $S$

- assume full collateralization: write $C = \phi(1 - S)$, with $\phi(\cdot)$ non decreasing
- optimal contract design

\[
C^* = \min(q^*, 1 - S) = q^* - \max(0, S - p^*)
\]

- higher $q^* = 1 - p^*$, higher longevity risk protection
Pool size

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Capital requirements

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Conclusion

We have examined some aspects of optimal longevity risk transfers

- differentials in information / capital requirements
- ‘pool and transfer’ vs. ‘pool and tranche’
- see Sherris and Wills (2008) for proper numerical analysis

Understanding of underlying exposures is crucial

- LifeMetrics, Xpect, etc., but mortality forecasting very challenging

Market participants’ needs are equally important

- so far mainly cashflow hedges (insurance paradigm)
- informed intermediaries can bridge the gap with value hedge suppliers
THANKS FOR YOUR ATTENTION