Voluntary Participation in a Defined Benefit Scheme
An Option Pricing Approach

by

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Comments

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Background

- Dutch pension funds: risk sharing funded plans with mandatory participation

- Extensive theoretical literature confirms plans are <u>ex ante welfare improving</u>

- .. ..but <u>ex post</u> new cohorts may perceive <u>a welfare loss</u> in case of severe underfunding

- They may want to leave, but have no choice than to participate

Background (2)

- Welfare-improving potential of pension funds is diminishing because of:

  1. Increasing maturity pension funds
  2. Horizon sponsor shorter than horizon pension promises => less room for risk smoothing
  3. Financial Innovation individual DC plans
  4. Change in ‘Spirit of the times’ (tijdgeest)?
  5. Changes in regulation: Tighter regulation risk-sharing plans, but accomodating regulation for risk taking in individual plans

Paper

- Paper investigates the critical funding ratio for which a generation is indifferent between participating or stepping out
- Paper uses option pricing framework
- Stepping out goes with exit penalty
- Penalty = (100%-FR)*AccruedRightsDB
- Stylized setting
  - Only investment risk
  - Only recovery contribution as fund instrument

Key relationship

A generation would like to step out when:

$\boxed{\text{Value of the exit penalty} < \text{Value of recovery contributions}}$

Fine Findings

Use of - potentially – rich analytical framework,

1. Young more inclined to step out

2. Higher flexibility to step out increases sustainability

3. More risk taking and more risk smoothing leads to higher stability in short term but less in longer term

4. Confirmation finding other papers critical funding ratio is somewhere between 80 to 100%

Suggestions

1. Option pricing neglects utility aspects
   - Option pricing restricted to economic value
   - Tradeoff is limited to comparing net-payoffs of "DB plan" and DC plan
   - Value of the exit penalty $<$ value of recovery contributions

   - Not in analysis: Individual preferences (risk aversion)
   - Not in analysis: Welfare aspects of risk sharing in DB Plans

   - Not clear why risk-sharing pension funds exist => why participate at all in risk sharing?

- Add utility-based analysis to enrich the analysis

  => more arguments in the analysis

  => critical funding ratio will increase

Suggestions (2)

3. Add sharing upside risk
   - Participants only downside risk, but no access to funding surplus
   - Symmetrical risk sharing

4. Discontinuity risk may also be relevant when surplus is too high
   - Liquidation by sitting cohorts

5. Demographic structure is stable
   - Key problem Dutch is increasing maturity

6. Contribution rate
   - Argument paper based on uniform contribution rate, but will hold also for (actuarially fair) progressive contribution

Final

- Very relevant topic
- Option pricing powerful to specify tradeoffs
- Analysis may gain by adding realistic features
- Multi-dimensional model