

The Victory of Hope over Angst? Funding, Asset Allocation, and Risk Taking in German Public Sector Pension Reform

R.Maurer/O.Mitchell/R.Rogalla

--

Discussion by Tom Steenkamp (ABP/VU)

DNB/Netspar/IOPS conference
Amsterdam, 22 March 2007

1

Summary (1)

Characteristics of pension system

- Short history/characteristics of the Civil Servant Pensions in Germany and Hesse:
 - Pay as you go financing system, tax sponsored.
 - Pension payments based on final salary and years of service.
 - Reforms in the plan since 1991 by lowering the benefit accrual (1991: 75% replacement rate after 35 years service; 2003: 71.75% replacement rate after 40 years of service).
 - After retirement: *indexed to wage inflation?* (not clearly stated in the paper, is there a contractual obligation?)
 - Severe penalty for job-mobility: *more than 50% of pension benefits is lost!*

2

Summary (2)

Building a pension fund

- Founding a pension fund to (partly) finance the future pension payments for the civil servants for the German federal state of Hesse:
 - Calculation of mortality tables (based on rather short history)
 - Simple model of population dynamics : no employee turnover other then retirement (so no growth in total jobs?)
 - Pension fund finances only *new* accrued benefits for the future and leaves current accrued benefit obligations aside.
 - Dynamics leads ultimately to steady state: of interest to know what the characteristics of this state are (e.g. duration of the liabilities , average age profile, contribution rate).

3

Summary (3)

Set up ALM study

- Stochastic ALM study and determination optimal asset allocation given the (regular) contribution rate or simultaneously asset allocation and contribution rate given the risk budget:
 - Liabilities discounted at a fixed real rate of interest, base case 3%.
 - Liabilities are calculated as PBO.
 - Contribution rate determined by cost of yearly accrued benefits as a percentage of total wages : in base case 18,7%.
 - Always full indexation. No stochastic volatility.
 - Contribution rate ladder that depends on the real funding ratio.
 - Horizon 50 years, after that termination and transfer to private insurer.
 - Simple asset structure and simple I.I.D. model for asset returns.
 - Clear Objective function: minimize worst case present value total plan costs .
 - Government is sponsor and bears the risks .

4

Differences with ALM studies at ABP

- Liabilities discounted at *variable* real and nominal (for regulatory purpose) discount rate.
- Liabilities calculated as ABO.
- Contribution rate determination more or less the same. Calculation at ABP depends on real investment return assumption (surprisingly: with 3% real investment return contribution rate is 18.5%).
- Conditional indexation ladder, between 100% nominal and 140% nominal; approx. 100% real).
- Fixed contribution rate.
- More elaborate asset structure and scenario generator (based on VAR-models): see Hoevenaars e.a. (2006).
- Horizon: 15 years
- No explicit objective function: implicit through trade-off between average pension result (incl. indexation) and risk of shortfall in the pension result.
- Active and retired participants are mainly risk bearers.

Main remarks/critics (1)

- **The paper:** Clearly written paper with thorough ALM analysis based on an explicit objective function. This function gives valuable insights in the trade-offs for German pension reform.
- **Risk sharing:** content of pension reform in the paper is rather limited: capital funded scheme with specific contribution rate ladder. Pension reform should also consider other options for risk sharing.
 - Analysis could include a form of an indexation ladder or other risk sharing arrangements.
 - See e.g. discussion in literature and Netspar-papers wrp. optimal pension contract and risk sharing arrangements.

Main remarks/critics (2)

- **Objective function:** Although interesting, it is doubtful whether the outcome can be interpreted as “the expected present value of total pension costs”.
 - Since future pay-offs are uncertain discount rates should be stochastic and not equal to risk free rate.
- **Objective function:** choice of this function should be more argued (Behaviour of politicians?). It only focusses on downside risks and does not explicitly take averages and upside potential into account.
 - Theoretically for optimal decision making you always need both a utility function and the entire probability distribution → ultimate trade off between expected pension costs and volatility in these costs ..

7

Main remarks/critics (3)

- **(ALM) Valuation of the liabilities.** The current approach provides, in spite of the suggestions in the paper (...“could be interpreted as a (simple version) of a Liability driven investing strategy”’), no direct link between assets and liabilities due to the fixed discount rate.
 - The use of stochastic interest rates would improve ALM analysis and will give different conclusions.
- **Long term investing:** since the horizon is 50 years it might be interesting to include recent findings in academic literature.
 - Time varying returns; Risks are horizon dependent (Campbell & Viceira).
 - Inclusion of human capital, or analysis based on total balance sheet of the government.

8

Main remarks/critics (4)

- Assumptions in general: paper contains several not very clearly argued assumptions. These assumptions are (probably) of great importance for the conclusions:
 - The specific contribution rate ladder (why this one, what is the effect of changes in this ladder).
 - The penalty factor in the objective function.
 - Flat term structure of interest.
- Economic assumptions: analysis is based on fairly high real return assumptions: stocks 9%, and bonds 5%:
 - Estimation period bonds one of the most favourable for bonds ever!
 - There is no sensitivity analysis on one of the most important assumptions in the ALM model

Other remarks and questions

- Economic assumptions : fixed risk free real discount rate of 3% in base case are also rather optimistic.
 - Moreover: changes in the fixed discount rates (1.5%, 3% and 5%) seems to have no effect on bond returns!
- Why is the PBO measure of liabilities used and how is it defined?
- How is the discontinuance value calculated?
- Why is chosen for a 5% CVAR? (in general more clarification for exact choice of objective function).
- The role of the penalty factor: implicit utility value on volatility of contributions?
- Show the results for sensitivity analysis of the most important variables and parameters (not in a footnote)