Faculty of Actuaries **Institute of Actuaries**

EXAMINATIONS

September 2004

Subject 304 — Pensions and Other Benefits

EXAMINERS' REPORT

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

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Chairman of the Board of Examiners

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Overall: *The questions that were predominantly bookwork or application of bookwork (1,2,4 and 7) were answered well. However the more unusual questions (3, 5 and 6) were not well answered. Students lost lots of marks by not reading the question and at best missing easy points and at worst putting down irrelevant comments.*

1 (i) Annual benefit statements

- DB: showing accrued / prospective pensions
- DC: accumulated / projected funds and potential pension
- Showing current transfer value

(ii) Annual Trustees report and accounts

- shows financial progress of scheme
- changes in membership profile

(iii) Statements to leavers.
Giving options and entitlements.

(iv) Actuarial valuation reports

- giving details of funding levels
- solvency position
- contributions requirements

(v) Investment reports

- giving asset breakdown
- investment philosophy, risks, returns, performance targets

(vi) Booklet

- detailing benefit promises
- shows options
- definitions
- rules summary

Generally well answered, with most candidates scoring well.

2 (i) Transfer to another scheme
Early receipt of benefits
Late receipt of benefits
Exchange pension for cash
Exchange cash for pension
Transfer of benefits from one beneficiary to another

(ii) Cautious basis related to current financial conditions
But robust enough not to need changing frequently
Consider likely impact of selection
Eligibility criteria
Whether the terms set are neutral or favour one option over another
Time limits during which the option offered may be exercised
Administrative simplicity
Easy to explain to scheme members
Appropriate allowance for discretionary increases

(iii) Transfer:

A minimum transfer value
No transfer value option close to normal retirement
Take account of funding position of scheme if poor
Guarantee transfer values for a limited period to protect against financial selection

Early receipt of benefits:

Take account of the funding position if this is poor
A minimum level of pension / cash

Exchange pension for cash:

Cannot exchange spouses / dependants pensions
A minimum residual pension after commutation
E.g. no lower than the spouses pension

Transfer of benefits from one beneficiary to another:

If life expectancy of transferee is lower than implied by the mortality table used

Again answered fairly well.

However some candidates listed six types of benefit rather than strictly options attaching to benefits. In part (iii) most candidates wrote down all possible restrictions rather than merely giving examples, however they still gained relevant marks.

3 (i) Underlying cost of medical care, in particular the extent to which the State subsidises the cost.

Eligibility for state benefits.

What level of Net Replacement Ratio is being targetted.

The level of retirement pension being granted.

If the retirement benefit is very generous then healthcare costs could just be met from pension income.

Eligibility for care scheme benefits e.g., age limits medical examination, pre-existing conditions, impose maximum amounts per annum or per condition etc.

Benefits pre retirement
Whether multiple claims for same condition allowed.
How is the scheme to be funded — all from company or some contributions from members.
What other schemes offer if the company wants to be competitive
Whether the benefit is a lump sum or a series of payments

(ii) PAYG

Advantage — only pay what and when actually needed

Disadvantage — lack of stability / security.

Book reserving

Advantage — choice of reserving basis, no cashflow except at time of claim (like PAYG) but more secure than PAYG

Disadvantage — security depends on covenant of company and strength of reserve.

Pre funded by company or member contributions

Advantages — could be tax favourably, stable, more secure.

Disadvantage — more consistent drain on cashflow, where to invest funds, risk of adverse returns or poorer returns on capital than if money left in the business.

Insurance

Advantage — secure if insurance co. solvent, could be cheap if competitive market, ancillary services e.g. claims counselling may be offered at little extra cost

Disadvantage — could be expensive as paying for insurance co. expenses, profit etc.

Part (i) reasonably well answered, although many candidates did not consider integration with either State benefits or the existing defined benefit pension scheme. In part (ii) very few *candidates thought of Book Reserving or Insurance as ways of financing the benefit cost, instead discussing 3 ways of funding in advance (Lump Sum, Regular contributions, & Terminal funding). Also many candidates wrote down all advantages and disadvantages they could think of for each method rather than just the one key advantage and one key disadvantage requested.*

4 (i) Pensions in payment
Deferred pensions
Pre-retirement lump sum death benefits
Pre-retirement spouses / dependants benefits
Ill health benefits

(ii) Pensions in payment — Advantages:

Eliminates mortality / longevity risk
Insures investment risks
Insures expense risks
Avoids need for company to set up a pensions payment system

Pensions in payment — Disadvantages:

May not be able to insure the exact benefit required
Cost of small increments (e.g. for discretionary increases) may not be cost effective
Especially if benefits in payment paid by more than one insurer
Risk that insurer might go insolvent
And be unable to meet in full the liability that has been insured
Expensive, as insurer's costs need to cover its profit margins
Having to realise assets to meet the insurer's single premium
The risk of poor administration or payment service from the insurer

Deferred pensions — Advantages:

As for pensions in payment
Investment risks cover reinvestment

Deferred pensions — Disadvantages:

As for pensions in payment

Pre retirement lump sum — Advantages:

Insurer bears mortality risks
Greater predictability in cost of benefits / reduces variability in amounts and timing
Especially for small schemes
Free cover limit available, depending on number of lives and scheme eligibility

Possibility of obtaining a continuation option when members leave service
A single claim can be significant in relation to the value of the scheme assets, especially for a new scheme
Possibility of profit sharing with the insurer
Avoiding the cost of having to realise assets to meet lump sum payments

Pre retirement lump sum — Disadvantages:

Expensive, as insurer's costs need to cover profit margins
For large schemes, more cost effective to self-insure

Pre-retirement spouses / dependants pension — Advantages:
As for lump sum
Covers the investment risk and the mortality risk in respect of the spouse

Pre retirement spouses / dependants pension — Disadvantages:

May not be able to insure the exact benefit required
Cost of small increments (e.g. for discretionary increases) may not be cost effective
Especially if benefits in payment paid by more than one insurer

Generally well answered, with most candidates scoring well.

5 General — all points awarded half a mark unless otherwise stated

- Firstly, the investment strategy should have regard to the expectation that the scheme has to provide the basic deferred annuity benefits
- against the requirement to generate profits from which future bonuses can be declared
- the trustees duties in this regard are set out in the trust deed and rules
- and due allowance was made when conducting the asset liability model upon which the current investment strategy is based
- The valuation basis can reflect the investments being held (which is the approach that has been adopted)
- and outperformance from equities be anticipated in advance
- or alternatively the other approach would be to not make any allowance for the expected outperformance of equities,
- to conduct the valuation purely on a bonds basis,
- and to await for the actual outperformance from equities to emerge before giving any credit for this.
- Making allowance in advance will improve the assessed funding position
- so that members close to retirement will receive a relatively high pension
- because it has been assumed that good returns will be achieved on the assets underlying the benefits of younger members
- Conversely, making no allowance in advance will benefit the younger members
- which is arguably fairer since they are taking all the risk of underperformance

- In practice, it is sensible to make a prudent allowance for outperformance which is the most equitable way of balancing the interests of the various classes of members (grouped by age).

Trustee 1 — additional points

- The scheme is clearly a form of defined contribution arrangement
- and so a relatively high equity component would be appropriate
- in relation to the benefits for younger members
- however, it is appropriate to meet benefits for older members
- and in particular pensions in payment
- through investment in bonds
- This approach is common for nearly all defined contribution arrangements
- where lifestyling approaches are standard
- although income drawdown vehicles are becoming more popular
- Under the proposal, the individuals who would gain most are those close to retirement
- who would avoid most or all of any cutback
- and once they had reached pensioner status would be protected from any further negative bonus
- arguably it could be considered that these members would then benefit unfairly from profits expected to be generated from the assets underlying benefits for younger members

Trustee 2 — additional points (some points from above apply)

- the proposal effectively locks in a guaranteed level of benefits without there being any prospect of bonus declarations in the future
- this is unlikely to be consistent with the terms of the trust deed and rules
- relatively, younger members fare better than older members
- though they may not see it that way since bond investments are unusual for this age group
- older members, but not pensioners, close to retirement fare worst
- and would suffer a major reduction to their expected level of benefits
- with no prospect of being able to make up the deficit

Very poorly answered.

Only a handful of candidates realised that the scheme is really like a DC arrangement. Many fell into the standard trap of saying bonds are better for those close to retirement (thinking members would not have time to benefit from equity outperformance as no bonuses post retirement) not appreciating that this crystallises the deficit and the negative bonus would still be declared, so those about to retire get the full hit of that negative bonus.

Also many candidates wrote pages of detail comparing the characteristics of equities vs. bonds which was not required. Few candidates wrote enough material of substance in relation to the marks available or in relation to the specifics of the scheme design, rather just skimming the surface or repeating standard material.

6 (i) Experience Items

- Expenses
- Investment return on assets
- Salary increases
- Deaths
- Withdrawals
  - (includes early/IH retirements)
- New Entrants
- Any bulk transfers
- Contributions paid

(ii) Explain how differences affect funding level

Expenses — higher than expected reduces assets / funding level (and vice versa)

Contributions — higher than expected increases assets / funding level
Investment return on assets — higher than expected increases assets / funding level

Salary increases — higher than expected increases liabilities/reduces funding level

New entrants — depends on whether contributions paid in respect of them are sufficient to cover liabilities accruing

Bulk transfers — depends on assets / liabilities transferred in or out

Deaths — no benefits are paid on death, so more deaths than assumed will reduce liabilities and increase the funding level

Withdrawals

- <10 years service — more than expected reduces liabilities (no benefits paid but funded uniformly) so increases the funding level

- >10 years service — more than expected will reduce the funding level as benefits paid out are likely to exceed reserves

(iii) Analysis of withdrawals

- Group the data
- ......by age, service and any appropriate member classes
- Need to make sure service groups are set consistently with benefit steps

- For age and service need bands/cells that are credible

- i.e. may have to group in fairly wide bands or even treat as not-credible
- for each group compare actual withdrawals with expected number based on exposed to risk
- comment on any unusual events (e.g. redundancy exercises)

(iv) Using the analysis

- Could use it to determine appropriate withdrawal assumptions
- ...but would need to consider how credible the data is
- ...also whether experience of last 5 years is likely to be typical
- Analysis may show whether step changes to benefit level are influencing employee behaviour
- ...if so, is it in the way that was intended (helping retention)?
- ...if not, could lead to review of benefits
- ...sensitivity of costs to changes in benefits (e.g. earlier vesting, uniform accrual)
- Part of overall Analysis of Surplus for each valuation
- Significant withdrawal profits/losses may suggest changes to assumptions/valuation method

Reasonably well answered.

However, many candidates did not read question thoroughly not realising the non-uniform scale of benefits, talking about post-retirement mortality or pension increases when it is a lump sum etc. Most candidates applied standard analysis of experience answers to a non standard question.

In part (ii) the impact of New Entrants or Withdrawals was often poorly explained or wrong. Some candidates took "funding level" a bit too literally as the percentage funding level (rather than amount of surplus/deficit) and suggesting that even if the experience item e.g. withdrawal payment, added no profit/loss then if the scheme already had a surplus funding level would go up as surplus now spread over fewer members and vice versa.

In part (iii) only the better candidates suggested that the non-uniform scale of benefits might have to be adjusted depending on the withdrawal experience at certain trigger durations.

7 The stages in the actuarial control cycle are

- Specifying the problem
- Developing the solution
- Monitoring the experience

The inputs are

- The general commercial and economic environment
- Professionalism

Looking at each stage in turn.....

Specifying the problem

- Need to assess the risks involved and how they can be handled (reduced)

- Analyse alternatives for design of the system

  - Benefits to be provided
  - Contributions

- Design issues

  - Defined benefit (e.g. UK) or defined contribution (e.g. Chile)?
  - Initial level of pension (desired net replacement ratio?)
  - Flat rate or linked to earnings in some way?
  - Whether it should increase in payment, and, if so, by how much?
  - Payable to who (qualification rules / means-tested etc.)
  - Payable from when?
  - Additional benefits for those with financial dependants at retirement?

- Financing

  - Affordability (level, predictability and stability of outgo / contributions)
  - macroeconomic impact on the nation e.g. impact on savings
  - Who pays (individuals, employers, funded from taxation)?
  - Contributions may be flat rate, earnings related (with thresholds & ceilings) etc?

Developing the Solution

- Use various actuarial models to consider alternative design / financing options

  - level and incidence of benefits
  - level and incidence of contributions
  - level and incidence of return on investments (if funded)

- Model(s) should

  - Allow for all features of benefits, conts, assets, economic & fiscal environment
  - Be practical so that results can be interpreted, verified and communicated

- Would need to make various assumptions......

- Demographic assumptions to assess numbers receiving/financing benefits, e.g.

  - Birth rates

  - Death rates
  - Employment rates
  - Migration rates

- Economic assumptions that may affect level of benefits paid or capital available to finance benefits

  - Price / earnings inflation
  - Economic growth
  - Investment returns (if funded)

- Need to test the sensitivity of these assumptions to understand risks involved

- Consider whether pension should be funded in advance or PAYG

  - if funded, need to determine contributions needed to meet targeted benefits...

  - if PAYG, need to project levels of benefit outgo

- "Reinsurance of benefits" e.g. by contracting out pension provision to individuals and or employers

- Solvency definition if funded

Monitoring Experience

- Check regularly whether the system is meeting the original objectives

  - Providing the expected levels of benefits?
  - Meeting the financial requirements of the state?

- Use dynamic models that reflect changing economic environment etc.

- Assess reasons for departure from assumptions

Professionalism

- Actuary needs to have regard to both the needs of

  - The state as the sponsor
  - beneficiaries

- Act with integrity and detachment from own personal circumstances

  - In this situation need to put aside ones own political beliefs

- Recognise that views of others may differ

- Achieve and demonstrate competence in their specialised skill

Commercial and Economic environment

- Actuary needs to be familiar with context in which they are operating

  – Economic backdrop
  – Political objectives of the government
  – Needs of individuals as beneficiaries
  – Needs of individuals and employers as direct financers of benefits
  – Availability and adequacy of non-state retirement provision

- ..and how all of these may change over time, e.g.

  – likely attitude of future governments
  – macroeconomic changes
  – demographic changes

There are a number of other points that could reasonably be made for which appropriate credit should be given.

Well answered on the whole.

Most candidates referred to all the relevant parts of the Actuarial Control Cycle, and got a good number of the very many points on offer. Answers were also well structured, which demonstrated understanding of the cycle itself, and good preparation on this topic.

END OF EXAMINERS' REPORT