EXAMINATION

April 2005

Subject ST4 — Pensions and other Benefits
Specialist Technical

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

28 June 2005

1 (i) Any comment about the recent relationship of premiums to claims.

The number of members insured give a reasonably stable base for claims experience.
Current provider may no longer be competitive.
Salary roll increases
Number of members increased
Ageing of membership
Change in insurance pricing structure
Changed Market conditions have made insuring spouses' pensions a lot more expensive
Improving longevity might have increased the cost of insuring spouse's pension.

(ii) Reduce benefits

5 times basic salary is top of the range for lump sum benefit. Check your peer group.
Is there scope to reduce this to 3 times basic without causing employee relation problems?
Consider scope to reduce 75% spouse's pension, probably high relative to peer group.
Suggest market review.
Following results of review, can examine self-insuring; in particular spouse's pension.
But cash flow may be an issue if lots of deaths over a short period.
Cash flow strain for spouse's pension is limited as pension paid over a period of time.
No significant extra administrative expense of paying spouse's pensions — as other pensions paid from the Scheme.
but self insurance increases risk to the Company
Consider catastrophe cover.
Have members met part of the cost?
Perhaps on a flexible benefits basis

Reasonably well answered. In (ii) many candidates only covered reducing benefits. Only the better candidates mentioned catastrophe cover.

2 (i) **Bonds**

Government backed — low default risk
Company issued — default risk varies depending on rating of company
Income fixed in monetary terms
or in real terms (e.g. index linked)
Defined levels of capital redemption on defined dates
High volatility in real terms
Bonds usually have a lower default risk than equities
Lower dealing costs
Lower expected return
Can be liquidity issues for company stock

Equities

Less certainty about the levels of income

Income (dividends) depends on the profitability of the relevant company
Do not provide any capital redemption proceeds
Capital can only be redeemed by sale on the open market
Market values of equities are generally more volatile than bonds

(ii) The benefits are "defined" therefore benefits payable should be unchanged
Increased security of accrued benefits
Especially for pensions in payment and deferred pensions
Sponsoring employer may have to pay increased contributions in the long run and /or the employee's contribution rate may be increased
Therefore possible lower security for future benefit accrual
ultimately loss of future accrual
And possible lower job security for active members
Reduces chance of discretionary benefits
Less chance of discretionary benefits.

(iii) Investing in bonds without taking account of the details of the liabilities can leave substantial mismatch risks

For example:
Currency risks
nature of liabilities (fixed or index linked)
Duration risk if the term of the liability exceeds that of the bonds

Scheme specifics include:
Size of the fund and likely to increase or decrease
Size of employer
Is the scheme closed to new entrants
Likely changes to the liability profile in the short, medium or long term
What are the expected cashflows for benefit outgo
The current funding position
decision on company/government bonds

(iv) Need to consider the views of the scheme sponsor
and the impact on the employer's future contribution rate
Do the trustees have the necessary skills, information and resources to make effective decisions — may need training or more advice
In particular the willingness to accept under performance due to market conditions
The importance of strategic allocation decision depends on the contribution it can make to the fund's investment objective
Legislative constraints and guidelines
Liquidity and marketability considerations
Diversification
The expected total return on the assets taking account of their attitude to risk
consider ALM study

Generally the best answered question, with better candidates noting that size of scheme relative to sponsor is relevant. Surprisingly, few candidates noted in part (ii) that benefits are defined so not directly affected by the investment strategy.

3 (i) **Market based valuation with equity risk premium**

Assets taken at market value

A "market value" of the liabilities is needed to ensure consistency
Liabilities are valued using a discount rate based on bond yields
representing a "risk free rate of return"
plus a constant or variable addition
to take account of the returns expected on other asset classes

The equity risk premium can be derived from market information and /or actuarial judgement

Taking account of the extra return from equities may be considered unsound unless account is also taken of the extra risks associated with equities

Mark to Market

The inflation rate, discount rate and related assumptions are derived solely from market information

Liabilities are discounted at bond yields
The bond yield may be based on government bonds
Or corporate bond yields adjusted for any credit risk
The discount rate may vary over time to reflect the shape of the yield curve
The market rate of inflation is derived from as the difference between the yields on fixed interest and index linked bonds

(ii) **Financial reporting valuations**

Provides audited information about a company to the outside world
Enables the financial significance of the pension benefit obligation to be assessed
Recognises the realistic costs of accruing benefits
Consistency from year to year
Avoids distortions from fluctuations in the flow of contributions
A number of disclosure requirements are usually required
e.g. elements of basis, actuarial method etc.
Basis/method may be prescribed

Funding valuations

The main purpose of funding valuation is to provide advice about the future level of contributions
There is no single definitive methodology and various methods are used by actuaries to set the discount rate when valuing assets and liabilities
It is common for valuation assumptions to be relatively cautious
Might include allowance for discretionary benefits
Objectives for funding valuations include
Assessing the degree of security for the benefits

Reviewing the financial progress since the previous valuation using the actuarial control cycle
Part of the purpose of the valuation may be to determine an appropriate investment policy

(iii) The Actuary can never be certain that a set of assumptions will be "correct" so the valuation may simply be a "best estimate" of future experience
A "best estimate" valuation may not always be appropriate
A more cautious, or possibly more optimistic, view may be more suitable e.g. by building in contingency margins / prudence
Presenting a range of values may be more useful in making decisions about the future of the scheme
If the financial commitment is a long term one a "worst case" scenario should be considered
Looking at alternative scenarios looks at whole sale differences in assumptions e.g. recession scenario with low growth and low inflation or boom (high growth and moderate inflation)
Trustees and sponsors can make there own judgements (i.e. no probability assigned)
Helps value guarantees
Aids understanding of the risks of the scheme
Employer planning looks at different trading conditions (i.e. scenarios)
Shows the sensitivity or otherwise to certain assumptions as altering assumptions (sensitivity analysis) shows the impact of changing a few key assumptions
May impact future benefit design (e.g. improvements)
And may be useful in determining an investment policy
Assessing security levels
Negotiations with employees or representative
Or mergers and acquisitions

(iv) Basic information, eg liability data, assets, benefits
Inter-valuation period events
Funding objectives
Valuation assumptions and method
Statement of economic and demographic assumptions
Contribution rate recommendation
Funding levels
Reconciliation

Under (i) some candidates tried to describe a method that incorporates both equity risk premiums and mark to market.

Under (ii) only the better candidates commented on the fundamental difference between the two valuations.

Parts (iii) and (iv) were not well answered.

4 (i) Salary increased on moving employer.
Transfer-in basis assumes future salary increases at a rate higher than the increases to the deferred pension in Scheme A.
Different actuarial assumptions, tv out to tv in.

Transfer value out may have been reduced to take account of Scheme A underfunding.
Expenses of calculation allowed for in one or both calculations.
Differences in benefit structure Scheme A vs. Scheme B, with B scale more generous.
For example, lower NRA, higher accrual rate, higher pension increases, better FPS definition etc. in B.
Cost of underpin guarantee allowed for in service credit calculation

(ii) £68,000 for 8 years, so $3^2/_{12}$ credit worth $3^2/_{12}/8 \times$ £68,000 = £26,917
But underpin = £20,500 $\times$ 1.06^8 = £32,674
Underpin > basic value of credit, so total transfer value available
= £68,000 + £32,674 = £100,674

(iii) If salary increases were not as high as anticipated then the credit was understated.
Likely if member only completed a short period of pensionable service in scheme B, whilst period to NRA much greater.
Ordinary TV basis for Scheme B being cut back to allow for underfunding
The service credit calculation allowed for a low rate of return, < 6% p.a.
Market movements combined with a market related tv out basis.
For example, equity based tv basis and falls in equity values leads to a fall in tv out values.
High discount rate on transfer out calculation, > 6%.

(iv) **General**

Nature of liabilities — term, currency, real/fixed etc.
Nature of available assets — term, currency, real / fixed, marketability, diversity etc.
Cash flow considerations
Attitude to risk of trustees / sponsor
Covenant of sponsoring company
Overall fund size
Funding level — surplus or deficit.
Fully funded on tv basis, so may be well enough funded to have fair degree of investment freedom.

Underpin

How many transfers in? Are they significant in total amount?
Cannot match service credit liability and guarantee at same time (except perhaps with derivatives).

Generally well answered, although in (i) very few candidates mentioned that the individual's salary probably increased on switching employers.

Under (ii), the most common error was assuming the 8 years included the service credit.

Most candidates struggled with (iii).

Some candidates only discussed investing for the underpin in (iv). Very few candidates realised that there is not a perfect match to the underpin – most said that the assets should be invested in fixed 6% bonds.

5 (i) **Option 1**

Advantages

Separate pot, not affected by funding position of main scheme *(member*)
Choice of funds, e.g. low / high risk, possibility of ethical investments *(member*)
Flexibility in form of benefits (member)
Member bears risks pre and post retirement *(sponsor):*
Such as investment
Mortality
Expenses

Disadvantages

Possibility of poor investment performance *(member)*
Need to administer investment pots (but could possibly subcontract to insurance company) *(sponsor)*

Option 2

Advantages

Contributions maintained in real terms *(sponsor)*
Easy for member to assess cost of topping up the main scheme benefits *(member / sponsor)*
Likely to be popular with members *(member/ sponsor)*
Aids retirement planning

Disadvantages

Assumptions prove to be too optimistic *(sponsor bears risks)*
Or pessimistic *(member gets poor value for money)*
With additional dimension of salary risk *(member may get poor value if salary increases less than assumed)*
Decisions required on treatment of AVC entitlements if scheme is subsequently altered (e.g. change in pension age) *(sponsor)*
Or, specifically, improved (e.g. are the added years eligible for discretionary increases) *(sponsor)*
Leading to possible complexities in the administration *(sponsor)*
And the need to explain / justify the position to scheme members *(sponsor)*
Investment likely to be pooled, so possibility of benefits being cut back if funding position poor, e.g. on discontinuance *(member)*
Potentially expensive if "added days" granted in all circumstances (e.g. enhanced early retirement / ill- health) *(sponsor)*
Potentially poor benefits on leaving service, unless benefits revalued to pension age *(member)*

(ii) **Option 1**

Invested in individual pots, with choice of different investment funds
E.g. with a third party such as an insurance company
Or administered by the trustees but segregated from the main scheme assets
Protects AVCs from a poor funding position in the main scheme
But subject to satisfactory monitoring of the solvency / performance of any third party

Option 2

Likely to be invested in with the main fund assets
So that there is a pooling of risks with the main fund

(iii) **Option 1**

Current fund value
How monies invested / name of investment manager
Contributions paid in year
Projected fund at pension age
Projected member's pension
Based on current fund
And allowing for future contributions at current level
Method to adjust amounts to current monetary terms
Current death benefit
Sensitivity tests

Option 2

Current pensionable salary
Current no of "added days" allowing for future contributions at current level
And equivalent benefit in monetary terms based on current pensionable salary
Summary of ancillary benefits
Comment on funding position of scheme if likely to affect entitlement

(iv) **Option 1**

Minimum level of initial contributions / increments
Range of fund options
Terms for switching between funds (e.g. timing / minimum switch amounts)
Availability of investment advice to discuss investment / switching issues
Legislative constraints

Option 2

Setting and monitoring appropriate assumptions
Assumptions need to be best estimates,
I.e. not too optimistic (so disadvantaging the scheme)
Or pessimistic (so disadvantaging the member)
Minimum level of initial contributions / increments
Determining how the "added days" are treated if member given generous early retirement or ill-health benefits

Generally, a straightforward question which, apart from (iv), was reasonably well answered. Only the better candidates mentioned the salary risk under option 2 in (i). Under (iv), only the better candidates noted that assumptions would be needed for option 2 and considered the possible restrictions for option 1.

6 (i) Meet the needs of the interested parties:

- the sponsoring employer
- members and their dependants
- government and regulatory authorities

Preferences of sponsoring employer are likely to include:

- acceptable level of cost
- predictable/stable cost in future
- attract and retain suitable staff
- provide competitive benefits by the standard of the employer's industry
- avoid future moral obligations to former employees
- simplicity of administration
- tax efficiency

Preferences of members and their dependants:

- providing a target level of income in retirement
- ....and financial protection to dependants on death before/after retirement
- affordability whilst in employment
- adequate information on which to base decisions on
  .....how much (whether?) to contribute
  .... planning for retirement etc.
- flexibility of scheme benefits

Preferences of government / regulators etc:

- encourage appropriate levels and forms of provision
- ensure adequate levels of provision
- ensure secure provision

(ii) Risks:

There is uncertainty for the member over the level of benefits, which may be less valuable than they expected for a number of reasons:

- not enough money was put in the first place
- investment returns were lower than expected
- annuity purchase terms were worse than expected
- ...due to lower interest rates
- …and increased life expectancy
- impact of inflation on purchasing power was not understood

Whilst most of the risks that are borne by the employer in a DB scheme are transferred to the member for a DC scheme, there may be a knock-on impact on the employer if members can't afford to retire or get much lower benefits than expected.

(iii) **Design options and process**

As actuary I can use various actuarial models to consider alternative design / financing options.

If you are looking to target levels of benefit, use models which illustrate the level of member and employer contributions needed based on appropriate assumptions.

Similarly, if the level of contribution is specified in advance, I can use these models to project the benefits that are likely to emerge.

Actuarial input is necessary in setting the assumptions for use in these models.

For example:

- investment returns
- inflation
- salary growth
- annuity purchase prices

Can test the sensitivity of the required contributions / expected benefits to changes in the assumptions.

Stochastic modelling can also help illustrate the potential variability of the benefits which will emerge.

Specific DC design issues which need to be addressed:

- Eligibility criteria
  e.g. age, period of employment, type of work, hours worked
- Retirement age — i.e. for DC, age at employer contributions stop
- Split of member/employer contributions
- Will member contributions be the same for all members?
- Will contributions (member and/or employer) be flat or age/service related?
- Will employer match optional member contributions (to a specified level)?
- How will expenses be met — from funds or by employer?
- Interaction with state benefits (if any)?
- What options will be offered?
- How does target benefits compare with existing scheme?

The actuarial models described can also show the impact on the employer cost over time due to any age/service related scales and contribution matching.

Given that investment return directly affects the level of members' funds/benefits for DC,

....actuarial advice will also be valuable in determining which investment options are to be offered to members.

Investment issues which need to be considered are:

- the risk / return balance
- tax efficiency
- expected level of income / capital
- level of management expenses
- range of options to be offered to members
- what default investment options are offered for members who don't make a decision

Members may be able to choose form of benefits:

- amount taken as cash (tax-free) and pension
- whether dependant's pension is purchased on retirement
- level of pension increases

Advice may be appropriate on any constraints imposed by legislation or the sponsoring employer on these options.
Should members be offered the facility to secure pension within the scheme? If so, actuarial advice is needed on appropriate terms.
Need to consider what level of non-retirement benefits will be provided.

(iv) **Ongoing Monitoring**

Need to provide members with information about their entitlements

- to ensure they make adequate provision
- to ensure members understand the risks they are taken
- to manage members' expectations

Also enables the employer to check that their objectives are being met.

- In particular, are funds on target to deliver original benefit targets?
- Will members be able to afford to retire at the age at which the employer wishes them to do so?

Also monitor provider to ensure competitive

Items to be disclosed include:

- current funds
- levels of contribution
- projected benefits on one or more sets of assumptions
- the assumptions used, including any benefit options
- impact of inflation on purchasing power of funds
- annuity conversion terms where appropriate

May be required:

- on commencement
- annually
- on leaving service etc.

Legislative requirements / professional guidance may:

- specify frequency and contents of disclosure
- specify (the range of) assumptions to be used
- require formal "valuations" to check project benefits won't exceed limits

It appeared that candidates had not allowed sufficient time for this long question.

Parts (i) and (ii) were generally well answered. Under (ii), only the better candidates considered the role of the actuary and all areas of the scheme design rather than just contribution levels.

Under (iv), few candidates considered the information to be disclosed to members.

Overall comments

Most candidates did well on the bookwork questions. Where application of knowledge was required, there was a clear difference between the stronger and weaker candidates.

Too many candidates did not structure their answers, particularly for the longer questions, and therefore focused on the same issue far too long. Candidates should note that in any particular question they only get credit for a point once however many ways they find of repeating themselves.