Faculty of Actuaries Institute of Actuaries

Subject SA4 — Pensions and other Benefits Specialist Applications

EXAMINERS' REPORT

April 2008

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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Comments

Overall the standard was lower than in recent sittings mainly because Q3 was not well attempted. Many candidates appeared to run out of time having spent too long on the numerical question.

Particular comments on the individual questions are set out below.

Q1 With the exception of part (vi), this question was reasonably well answered although many candidates did not write enough points given the marks available. Too many candidates limited their solution to part (ii) to the inability of the Scheme Actuary signing a GN16 certificate. It was disappointing that the answers to this part did not always suggest solutions to the issues candidates covered in parts (iv) and (v).

The scope of answers to part (vi) was too limited.

Q2 Overall this question was answered well by most candidates although knowledge of the PPF benefits for part (vi) could have been better and quite a few candidates lost marks through basic calculation errors which was disappointing.

Under part (ii), some candidates demonstrated far greater confidence in their own estimates for part (i) than was warranted suggesting some fairly unlikely reasons for their large differences. Few candidates in this situation conceded the possibility that they may have made arithmetical slips.

Collectively candidates knew the checks to be made to answer part (iii). However it was not uncommon for candidates to either:

- *Concentrate on the analysis of surplus as a check and not consider the wider checks; or*
- *Concentrate on basic data checks and fail to mention the analysis of surplus.*

This part (iii) referred specifically to checking the liability valuation so lengthy discussions on assets held, actual and expected investment returns, timing and amount of cashflows were not appropriate and lost candidates time.

Q3 As noted above this was not answered well with many candidates confusing the advice to the company and advice needed by the Trustees. Notable examples were providing GN16 certificates to the employer and advising the Trustees on the assumptions to be used to determine the bulk transfer amount.

For part (i) many candidates misread the question and explained how a bulk transfer could be calculated.

For part (ii) surprisingly few candidates mentioned the Sale Agreement or the Actuary's letter in their solution. Instead many candidates tried to twist this into an actuarial basis setting question rather than a fairly straightforward question on the mechanics of calculating a bulk transfer.

For part (iii) most candidates grasped the basics but very few considered the position from X and Y's viewpoint, e.g. higher transfer could be offset against the price paid by Y.

For part (iv) too many candidates simply trotted out their standard list on the advice Trustees obtain without tailoring their answer to the advice needed in this situation. Only the better candidates mentioned the covenant of Y.

Mixed responses for part (v) with candidates broadly evenly split between those who agreed with the suggestion and those who stated that the trustees should pay the same amount irrespective of where the payment was to be made to without convincing supporting arguments or any attempt to explore the Trustees' suggestion.

Part (vi) was challenging with only the better candidates stepping back and thinking about the ways a business might place a value on its pension liabilities. Candidates scored poorly, even though the examiners were prepared to give credit for any attempt to explore the factors that make it difficult to establish the natural market price for defined benefit liabilities.

1 (i)

- The cost of benefits to the sponsor may be greater than anticipated or funded for
- The timing of costs may be different from when anticipated
- Or the timing of costs may fall when there are other calls on the funds of the sponsor
- These risks are driven by a number of factors relating to
  - Demographic factors relating to membership
  - Investment factors relating to the return on assets
  - Other business specific matters such as rates of salary growth
  - Economic factors such as rates of inflation
- There may be other risks from members' expectations not being met such as claims against surplus funds
- There may be member options that can select against the fund to increase costs
- There is a risk that legislation changes might increase the level of liabilities
- Or alter the timing or pace at which funds must be accrued to meet the liabilities
- There may be taxation changes that increase costs
- The costs of administering the Plan may be uncertain or dealing with the Plan may use valuable management resource
- Closure of the Scheme may lead to an increasing contribution rate with time
- TD&R may give key powers to the Trustees following a takeover
- Liquidity risk at time annuities are purchased given 100% equity strategy

(ii)

- There may be contracts of employment that require a defined benefit to be provided
- There may be significant Industrial Relations issues in removing a defined benefit arrangement and/or a significant transfer exercise
- There may be no scope under the rules of the Plan to cease accrual.
- Or cessation of accrual may trigger a wind up with significant cost implications
- A s75 debt may be triggered
- Or the trustees may be the only party with the power to stop accrual.
- The trustees might find it difficult to support a transfer of liabilities as being in the members' interests
- Transfer of liabilities from DB to DC involves transfer of risk to members which may be difficult to quantify
- The transfer of benefits would require member consent which may not be forthcoming
- As actuary, unlikely to be able to complete the required GN16 certificate
- And might be time consuming
- Requiring advice provision to members
- And consent may be even harder to obtain from deferred members where there is no contact

- The basis on which transfers might be made might not be straightforward
- The basis on which future benefits might accrue in the Stakeholder arrangement might need to be negotiated with members
- There may be insufficient funds in the Plan to offer transfers that would be attractive to members

(iii)

- Transfer values paid out in normal circumstances should be no less than the expected cost within the Plan of providing the accrued benefits assuming that benefits have ceased to accrue
- This also applies if benefits are based only on service to a specific historic date although they may still be based on salary at date of leaving employment (i.e. salary link maintained)
- They should be calculated with regard to market rates of return on equities, gilts or other assets as appropriate
- With regard to the assets of the Plan (currently equities)
- Could allow for buy out costs/gilt returns in payment
- Bases should be sensitive to changes in market conditions and value of assets
- And allow for appropriate best estimate mortality assumptions
- Allowance can be made in setting a valuation rate of interest for future reinvestment rates with the rate being banded rather than changing daily with market conditions
- In normal circumstances a simple formula approach is usually used with one pre-retirement valuation rate of interest for all durations
- Basis may be similar to ongoing valuation bases but possibly less cautious to reflect best estimate nature of transfer value
- Discretionary increase practice should be allowed for unless Trustees specify otherwise
- And allowance can be made for expenses of calculation
- Transfers paid should not pose a threat to the security of the Plan
- Transfer value can be reduced to reflect funding position of the Plan on the transfer value calculation basis
- This requires a formal report from the Scheme Actuary setting basis to be used and any reduction
- Scheme Actuary has formal professional guidance on setting transfer values (until 30 September 2008)
- Trustees have responsibility to act impartially between different classes of member including those who remain in scheme and leave in particular for this case.

(iv)

- Members may be adverse to the risk of transfer to defined contribution structure
- Scheme may be underfunded on a transfer value basis given ongoing funding result
- So without additional funds transfers offered would not even equate to even chance of replication benefits

- Even before allowing for potential loss of greater than real salary increases in a replacement scheme
- And cost of securing annuity individually at retirement
- So unlikely members would find transfers attractive
- And unlikely any financial adviser would recommend transfer
- Unless special circumstances such as ill-health, desire for control, marital status etc.
- With attractiveness of transfer probably even less for older members with shorter period to match single equity based investment return
- Covenant of sponsor may be part of decision making process for members
- But if scheme winds up it is possible in some circumstances that members may get more as transfer value
- Materiality of TV compared to members other financial interests may change behaviour

(v)

- MD has no power to require the trustees to enhance TVs by 10%
- Indeed to do so might lead to worsening of funding position
- Which trustees cannot allow to happen given responsibility to act impartially between classes of members
- This enhancement therefore would require to come directly from the Company to members
- And if enhancement paid into scheme Trustees may elect to use this in a different way given desire to equally advantage all members
- So may need to be as a Single Contribution to receiving arrangement from Employer
- Ideally needs to be done with blessing of trustees to prevent problems
- Trustees will need to take professional advice and may seek guidance from The Pensions Regulator
- And their co-operation in calculating basic transfer values
- They may not wish to offer a guarantee on these in bulk
- So may be difficult for members to decide without guarantees unless underwritten by employer
- Will require careful communication to members, who must not be advised by employer
- Must be offered to members with no suggestion they are required to accept
- To protect Employer and to help members decide they should ideally get independent advice
- Will take time to put offer together
- And members will need time to consider and decide on offer (will 3 months be enough?)
- Who will, depending on different attitudes to risk, require different levels of probability of doing better than Plan benefits
- Cost of exercise may outweigh saving
- Have regard to Pensions Regulator guidance
- Consider whether to offer enhancement if transfer to other arrangement

(vi)

- Any reasonable argument can be made why 10% is only a broad brush approach, for example as below:
    - 10% may make transfer attractive for some tranches of members (i.e. younger members)
    - For very young members it may be more than is required to make transfer attractive
    - For older members this may not be enough to make the transfer attractive
    - Because single rate valuation rate of interest for base transfer value will compare differently to realistic achievable cautious return for members of different ages
    - Therefore valuation rate of interest to use in assessing total transfer plus enhancement might be term dependent
    - Which needs to be actuarially justified to avoid age discrimination and maintain support of trustees
- Pay more than 10% to make offer more attractive
    - Ideally the offer should be just enough to make offer attractive to all members
    - Without paying too much to any class of member
- Give longer period for decision making
- The offer needs to ensure that total transfer is guaranteed whilst members consider acceptance
- And ideally Employer may wish to fund advice for members up to a limit
- Or even provide independent adviser on site to active members
- With member presentations to ensure message clear
- Offer should be made as efficiently as possible to all members including deferreds
- By carrying out a full search exercise for ex-employees who employer has lost touch with
- Offer may also include enhanced contributions to replacement arrangement to increase attractiveness for those who accept
- Cost is likely to be more in line with company accounting result
- So cost might be of the order of £7M
- Plus cost of advice to members
- And expenses of exercise
- If take up rate 100% then there may be no implications for full valuation of business at £10m
- Whereas retaining liabilities might have to carry a risk factor in assessment by Company B

2 (i) *Estimate liabilities on 2007 assumptions*

(a) *using membership data statistics as at 1 January 2008*

Calculate annuities required:

Solution below assumes 100% proportion married and that none of the pensioners were dependant beneficiaries, other reasonable assumptions were accepted

Actives
- YoB required is 2008 – 48 = 1960
- Annuity is 18.17 + 0.5 × 5.13 = 20.73

Deferreds
- YOB required is 2008 – 44 = 1964
- Annuity for yob 1960 is 20.73
- Annuity for yob 1970 is 20.95 (18.43 + 0.5 × 5.04)
- Interpolate to give .6 × 20.73 + .4 × 20.95 = 20.82

Pensioners
- If ¼ of member's pension typically commuted, then dependant's fraction is 2/3 (0.5/0.75)
- YOB required is 2008 – 65 = 1943
- Annuity for yob 1940 is 17.38 + 2/3 × 5.40 = 20.98
- Annuity for yob 1950 is 17.83 + 2/3 × 5.25 = 21.33
- Interpolate to give .7 × 20.98 + .3 × 21.33 = 21.09

Actives: $(15 / 60) \times £8.4\text{m} \times (1.045/1.065)^{(65-48)} \times 20.73 = £31.5\text{m}$

Deferreds: $£1.7\text{ m} \times (1.03/1.065)^{(65-44)} \times 20.82 = £17.5\text{m}$

Pensioners: £1.2 m × 21.09 = £25.3m

Total: 31.5 + 17.5 + 25.3 = £74.3m

(b) *using changes in data statistics from 2007 to 2008*

Actives: $£34.0\text{m} \times (15/14) \times (8.4/10.0) \times (1.065/1.045)^{(48-47)} = £31.2\text{m}$

Deferreds: $£14.7\text{m} \times (1.7/1.5) \times (1.065/1.03)^{(44-42)} = £17.8\text{m}$

Pensioners: £23.5 m × (1.2/1.1) = £25.6m

(All these assume / conclude from annuities above that impact of YoB change is minor)

Total: 31.2 + 17.8 + 25.6 = £74.6m

(ii) *Comment on results in (i)*

	Centre's results	*Checks (a)*	*Checks (b)*
Actives	£31.4m	£31.5m	£31.2m
Deferreds	£17.6m	£17.5m	£17.8m
Pensioners	£25.5m	£25.3m	£25.6m
Total	£74.5m	£74.3m	£74.6m

- Results are consistent with both sets of checks
- The first checks demonstrate that based on the current membership data statistics, the processing centre's calculations appear to be accurate
- The second checks demonstrate that based on the changes in the summary membership statistics, the results are consistent with the previous valuation
- Conclude that, subject to confirmation that the data is complete and correct, the calculations are accurate …
- … the correct benefits have been valued
- … the correct assumptions have been used

(iii) *Other checks and information required*

- checks in (i) are only as good as the membership data provided
- both in terms of numbers of members, and
- in terms of the correctness of key data items i.e. salaries and pensions
- (and the accuracy of the calculation of average ages / service by the centre)
- Any members wrongly excluded (or included) in the membership data will be excluded from both the summary statistics and the liabilities
- Need to do some further checks which validate that the membership data is sufficiently complete and correct for the purposes of the valuation
- Also check that benefits have not changed
- A key check is the reconciliation of membership movements.
- Both within each class of member and between classes.
- Need details of membership movements to/from each category.

Average salary increases look sensible.
Average salary increase for stayers is 5% (assuming no new entrants)
But need to check for outliers (e.g. no increase or salary fall, given definition is basic)

Average deferred pension has increased by 3%
Average current pension has increased by 3.5 to 4.0%.

- not inconsistent with inflation
- unclear what impact of new deferred/pensioners would be on average

Check key data items against audited/draft accounts

- contributions paid in 2007 vs (salaries in data × employer / employee rates)
- pensions paid in 2007 (plus increase) vs pensions in data

Accounts can give an indication of liabilities discharged by membership movements
- commutation payments at retirement
- refunds
- transfers out

and new liabilities
- transfers in (individual / bulk)
- augmentations

- spot check liability for any significant members

"Roll-forward" check – very rough estimate of expected liability
Total liabilities in 2007 (£72.2m)
Less pension outgo of 1.1.m
Plus estimated normal cost 2.4m (£34.0/14 years)
Plus interest on liabilities ~ 4.5m (at 6% say)
Expected liabilities at 1/1/2008 ~ £78m
But we have ~ £75m
Is difference explained by liabilities discharged (see above)?

Need to do Analysis of Surplus, to review impact of
- withdrawal profits (no allowance in assumptions)
- early/late retirements (no allowance / terms favourable to scheme?)
- commutation (factors less than value of member's pension given up)
- transfer values (TV basis may be weaker than funding basis?)

(iv) *Results on 2008 assumptions*
Rule of thumb – reducing post-retirement discount rate by 1% adds 14% to liabilities (12%-16% accepted)
So fall from 5.00% to 4.75% p.a. increases liabilities by ~ 3.5%.
(credit was given for other pragmatic and plausible approaches to post-retirement adjustment)

Actives:

Change in interest rates: $£31.4\text{m} \times (1.065/1.0475)^{(65-48)} \times 1.035 = £43.1\text{m}$
Change in salary assumption: $£43.1\text{m} \times (1.04/1.045)^{(65-48)} = £39.7\text{m}$

Deferreds: $£17.6\text{m} \times (1.065/1.0475)^{(65-44)} \times 1.035 = £25.8\text{m}$

Pensioners: $£25.5 \times 1.035 = £26.4\text{m}$

(v) *Error in centre's calculations*

	Centre's results	*Checks*
Actives	£43.2m	£39.7m
Deferreds	£26.2m	£25.8m
Pensioners	£26.3m	£26.4m
Total	£96.0m	£92.2m

- Deferreds and pensioners results look correct.
- Active results look wrong.
- The fact that deferred/pensioner results appear correct suggests interest changes were probably picked up.
- Calculating active liabilities using 4.5% salary increases gives £43.1m (details shown above)
- Suggest centre has failed to spot the salary increase assumption change

Credit was given for other plausible explanations supported by analysis.

(vi) *PPF*

- Need indicator to split pensioners by age/ill health as
  - Members over NPA (i.e. 65) or who retired on ill health grounds receive 100% of their initial pensions
  - Other members receive 90% of their accrued pensions
  - Benefits for those who don't get 100% subject to a compensation cap
  - Need current cap
- Cap is aggregate of all schemes from employer
- need confirmation that members are not in another scheme or details
- PPF pension increases are 2.5% LPI for post April 1997 benefits, nil otherwise
  - So need appropriate splits of pensions
  - … as scheme not contracted-out 5% LPI increases is provided on all benefits, so no need to split pensions in this way for ongoing and solvency valuations
  - for actives can normally determine from existing data, e.g. service dates
  - for deferreds and pensioners, may need to get service dates
  - could assume all post 97 for prudent overstatement of liabilities
  - but this may result in higher levy payments than necessary
- 50% spouse's pension – no additional data needed
- need specified financial assumptions for S179 valuation
  - net pre-retirement discount rate (allows for revaluation)
  - post-retirement discount rate
  - assumption for 2.5% LPI increases
- if separate NPA applies for any tranches of pension, benefits have to be dealt with separately
  - so may need details, if, e.g., historic equalisation window exists

3 (i)

- Accrued benefits could remain in Company X's scheme
  - and the members would be entitled to deferred pensions
  - a transfer could subsequently be taken on normal cash equivalent basis
- A bulk transfer payment could be made from Company X's scheme to a scheme established by NewcoY
  - reflecting the value of the benefits accrued in Company X's scheme
  - on a basis determined by the actuary to Company X's scheme
  - possibly supplemented by additional payments from Company X due under the sale and purchase agreement
- NewcoY could adhere to Company X's scheme
  - and the members could continue to participate in Company X's scheme
  - retaining the link to final salary for accrued benefits
- The benefits could be bought out, although this is an expensive option

(ii)

- a copy of the pensions clause in the sale agreement
- and a copy of the actuary's letter establishing the basis of transfer to apply
- Relevant dates if not set out in the sale agreement (eg completion, transfer)
- Need rules so correct benefits can be valued (including guarantees/options)
- a schedule setting out the transferring members
- possibly supplemented with other employees of NewcoY who did not ultimately transfer
- necessary to establish the accrued benefits earned by each member at the date that service ceased in Company X's scheme
- where accrued benefits must be determined in a way that reflects the assumptions in the actuary's letter, particularly as it relates to salary inflation
- there might be a participation period
- in which case cash flow data relating to the transferring members over the participation period may be needed
- although such arrangements are now unusual because of concerns around the potential liability under s75 for the adhering employer
- market information is necessary (eg yields, inflation)
- the precise nature of which will be set out in the actuary's letter
- also need adjustment to roll up the transfer value at the date of termination to a date shortly before the Transfer Date
- and similarly to roll up net cashflows during the participation period
- usually there will be a cash roll up during the last few days before payment
- so bank base rates (or similar) will be required

(iii)

- Company X will want the accrued liabilities for the members transferring to NewcoY to be discharged at the lowest possible cost
- subject to there not being a corresponding reduction to the transaction price if the transfer payment is not seen as sufficient to cover the liability
- or alternatively, if a more generous payment is made
- possibly including an element of surplus

- then Company X will want a corresponding increase to the purchase price
- NewcoY will consider the financing risks that they will underwrite by agreeing to accept the transfer payment in to their new scheme
- so if NewcoY's scheme is defined contribution in nature, there will be no underwriting of such risks
- and NewcoY may be prepared to agree to a low transfer payment being made
- possibly only equal to the terms that would be available to the transferring members as individual leavers
- however, if NewcoY has financially literate employees, or the workforce is heavily unionised, it is possible that there might be unrest due to the loss of final salary benefits as a result of the transfer
- if NewcoY has agreed to offer defined benefits in relation to the transferring entitlements, then they will wish these to be adequately funded
- and their position will largely be the reverse of Company X's position
- Pensions only part of the overall deal

(iv)

- if the sale agreement anticipates NewcoY adhering to the scheme and becoming a participating employer, the trustees will need to rely on NewcoY for appropriate contributions to be paid to finance any deficit and the costs of ongoing accrual
- so the trustees will wish to have a good understanding of the financial covenant of NewcoY
- such as the quality of their management, the risks set out in their business plan and their prospects of success
- before agreeing to the admission of NewcoY as a participating employer (assuming that the trustees are required to give their agreement under the scheme trust deed and rules)
- if a bulk transfer payment is to be made, the trustees will want to consider the overall impact of the payment on the finances of the scheme
- and that the transfer payment provides appropriate value for the benefits being transferred
- and will be used to provide at least broadly equivalent benefits in Newco Y scheme
- if TV to be paid, take advice on maximum amount they can pay
- if the scheme is in deficit, the trustees are likely to want to ensure that the situation is not worsened as a result of the transfer payment
- particularly if the covenant of Company X is perceived as being poor
- and may insist that a share of fund approach is taken
- if the scheme is in surplus against its technical provisions, and employer contributions are reduced to reflect this surplus, the trustees may be prepared to release some surplus, at least to the extent that this is already reflected in the contribution arrangements
- Trustees not party to sale agreement so are not bound by its terms
- If transfers are to be 'without consent' Trustees will need actuary to sign GN16 certificate
    - Although this doesn't give authority to pay TV

- Trustees will need advice on which assets are to be transferred
    - Sale agreement may set out adjustment/reduction if paid as cash

(v)

- the trustees of Company X's scheme have obligations to both the transferring and remaining members of the scheme
- and may take the view that, since the transferring members have not left the scheme voluntarily, they shouldn't lose pension benefits as a result of the transaction
- if a defined benefit scheme is being set up, then the trustees will want to be sure that any transfer payment being made will directly benefit the transferring members
- and will seek to pay the lowest possible sum which is sufficient to ensure that "year for year" type credits are being offered
- and the trustees may only agree to transfer any surplus if it is used partly or wholly to finance benefit improvements for the transferring members
- as such the trustees will be very interested in knowing how any transfer payment will be converted to additional service for the transferring members on an individual basis
- and will usually wish to agree this basis with the trustees of the receiving scheme
- if the receiving scheme is defined contribution in nature, then the higher the transfer payment, the greater the benefit to the transferring members
- and the trustees may wish to be more generous in the terms on offer
- to reflect transfer of risk (investment/longevity)
- possibly agreeing to a past service reserve type transfer on a prudent basis
- particularly if the covenant of Company X is good and security is not an issue in the transferring scheme
- such transfer terms would turn out to be too generous, however, if the member left NewcoY shortly after the transfer
- since the individual would retain the withdrawal profit that would otherwise have been made by the scheme

(vi)

- best estimate assumptions would be the starting point
- and then adjusted by a risk factor depending on how certain the best estimate cost would be in covering the actual cost of those liabilities
- and then further adjusted to reflect any supply and demand factors
- the "best estimate" cost would depend on the assets being used to back the liabilities
- and if those were growth oriented, then the best estimate cost would be reduced
- but with a greater risk of uncertainty around the sufficiency of that cost
- if the assets were "matching" in nature, then the best estimate cost would be increased
- but with a much greater certainty that the cost would be sufficient
- ultimately, capital models suggest that over the long term growth assets should produce superior performance compared to matching assets

- and so if the investor has a long term outlook, then the uncertainty risk in using growth assets would be correspondingly reduced
- the other factor to consider is longevity
- where trends are still very uncertain
- so prudent pricing models tend to apply
- finally, as far as supply and demand is concerned, this is clearly not an issue in a commercial business transaction where the pension issues are often a minor concern
- but it is far more relevant in relation to buyout (or other alternative financing markets)
- where the lack of market competition in the UK has significantly driven up prices
- although the market is now finally opening up with other players and solutions being introduced starting to push prices downwards

END OF EXAMINERS' REPORT