

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2014 examinations

Subject SA4 – Pensions and other Benefits Specialist Applications

Introduction

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

D C Bowie
Chairman of the Board of Examiners

July 2014

General comments on Subject SA4

This subject examines the ability of candidates to apply actuarial practice and concepts, together with specific knowledge of the UK pensions and employee benefit environment to potentially complex problems, integrating their analysis into a coherent whole, and evaluating and interpreting results to draw explicit conclusions.

The examiners therefore look for candidates to demonstrate their understanding of the syllabus by applying their knowledge and core actuarial skills to the specific situation that the examiners asked, having read the question carefully. Many of the unsuccessful candidates provide answers that are not sufficiently specific to the subject matter of the question, reproduce core reading that does not directly relate to the question context, or focus on one specific point without covering the a sufficient range of points to answer the question. This does not enable the candidates to achieve the required marks. As regularly stated, the examiners encourage future candidates to remind themselves of what they learned in the core technical and core application subjects, and to use past paper questions to practise applying these skills to the specific scenarios tested.

Good candidates demonstrate that they have structured their solutions well – this is a big advantage in making points clearly and without repetition. There is a significant incidence of points being repeated in slightly different ways, restricting the scope for candidates to score marks. Good structure enables candidates to use the later parts of questions to generate ideas for answers to the early parts (or use their solutions to earlier parts of questions to create a structure for later parts). Time management is important so that candidates give answers to all questions that are roughly proportionate to the number of marks available. The questions are set so that it should take approximately twice as long to answer a 10 mark question as a 5 mark one. Answers should therefore be similarly proportionate.

Comments on the April 2014 paper

The overall standard of scripts was similar to the previous session, although there was a slightly lower pass rate. As reported in previous reviews, candidates always appear to find the step up to a smaller number of more involved questions relatively difficult, finding the application aspects of the course harder to score well on. This is an area that SA candidates consistently need to work harder on in preparation.

It is important that candidates make sure they provide a full answer to all questions. Breaking the question down into smaller parts helps to make sure that a suitable breadth of answer is supplied. Candidates need to check that their answers specifically refer to the details of the question, using all of the information in the question pre-amble. Taking care in these points of technique will help students score better.

- 1**
- (i)
 - CETV – The value which a member of a pension scheme may, under section 94 of the Pension Schemes Act 93
 - require to be paid as a transfer payment to another registered pension arrangement.
 - (ii)
 - An early leaver has the right to a transfer value
 - the transfer value is no less than the actuarial value of the deferred pension given up
 - Trustees are responsible for setting the basis
 - After appropriate actuarial advice
 - CETV regulations should be followed
 - Unusually set on a best estimate/realistic basis
 - Basis should be set having regard to market rates of return on equities, gilts or other assets, as appropriate
 - and with regard to actual assets held
 - In theory, a yield curve approach could be used
 - and the interest rate could be changed daily
 - In practice a single rate of interest is used (or different rates pre- and post-retirement
 - and interest rate is only changed monthly or when it moves out of a band
 - Cashflow approach would be more accurate but formula approach generally used for administrative ease
 - Can include allowance for discretionary increases if likely to happen
 - Options not allowed for if cost is less than benefit given up
 - e.g. tax-free cash sum not allowed for if less valuable than pension
 - Allowance may be made for the cost of calculating the transfer value
 - Value for money for member contributions
 - Expenses are also saved if a transfer value is paid out
 - A common approach is to ignore both aspects of expenses in the calculation
 - TV should be at least as big as initial cash equivalent before any reduction is applied
 - If the scheme is not fully funded on CETV basis then Trustees can reduce TVs
 - to protect remaining members
 - Different arrangements can exist if there is a transfer club between schemes
 - For a DC scheme the TV is normally just the value of the member's fund
 - Should check Trust Deed & Rules in case any special restrictions/rules

(iii)

	<i>Advantages</i>	<i>Disadvantages</i>
<i>Member</i>	<ul style="list-style-type: none"> • May be able to get larger pension • Or benefits that suit needs better • e.g. if have no dependants • or want to provide more dependant pension • May be in poor health • So can buy enhanced annuity • No employer risk • Consolidation of all pension in single place 	<ul style="list-style-type: none"> • Lose guaranteed benefit • And protection from PPF • Lose any possibility of discretionary increases • Take on investment risk • Take on mortality and expenses risk
<i>Trustees</i>	<ul style="list-style-type: none"> • Should help funding level/increase security • Gives members what they want 	<ul style="list-style-type: none"> • If not reduced and not fully funded then can lessen security • Could be liquidity issues
<i>Employer</i>	<ul style="list-style-type: none"> • Removes risk • Cheaper than buyout in long term • Could look favourable in company accounts 	<ul style="list-style-type: none"> • Can be selected against by those in poor health

(iv)

- Will require insufficiency report before any reduction can be made
- The greater the degree to which the scheme is underfunded, the more necessary it may be to reduce transfer values to protect remaining members.
- Have TVs been reduced in the past due to underfunding?
- Is the funding level improving or worsening?
- The stronger the employer's covenant, the less that trustees may feel it necessary to reduce transfer values.
- Members less likely to take a reduced TV
- The sooner that any shortfall in the scheme's funding level is to be paid off under a Recovery Plan, the less necessary it may be to reduce transfer values.
- If there are contingent assets in place to be paid to the pension scheme in the event of employer insolvency, it may not be necessary to reduce transfer values.
- If the employer has undertaken to make a payment to the scheme equal to the level of underfunding for each transfer paid.
- The effect of reducing transfer values is to reduce the immediate cost to the scheme if the member decides to transfer. Accordingly, trustees will want to be satisfied that this is actually necessary to protect the interests of other members and not just to reduce employer costs.
- The employer may feel that the introduction of a reduction gives a damaging impression of the state of its business and may therefore prefer to make further contributions to enable transfer values to be paid in full.
- It is unlikely that any remaining member would lose out as a result of a transfer value being paid in full unless an employer became insolvent.

- Even where the employer becomes insolvent, the Pension Protection Fund could provide a level of protection to most scheme members.
- The materiality of transfer values will also be a relevant factor for the trustees. If transfer activity is very low and the size of the transfer values insignificant compared to the size of the scheme assets, the trustees may feel that a reduction in transfer values is not warranted.

(v)

- Only applies to non-pensioners
- Would need to have process for the exercise set out clearly
- With involvement from Trustees
- Members can be offered an amount greater than the normal TV e.g. 120% of their current TV
- There is an industry wide code of good practice which is voluntary, but Trustees will want to be seen to be acting correctly.
- Cash incentives are not permitted, so any enhancement will be in terms of increasing the TV
- Trustees might want cash injection from employer
- Members have to be provided with impartial financial advice
- Which is paid for by the sponsor
- Members should receive clear, unbiased communication
- The timescales for decision should not put pressure on members to decide
- And a minimum two week cooling-off period for members to change their minds
- Should reduce eventual cost of buyout as even 120% of the TV will probably be less than buyout cost
- However, take up could be low so total saving could be minimal
- Depending on age profile, the incentive may need to be high so savings reduced
- Costs could be high as advisers will need to be involved
- If it is not done properly the members could complain and there is a reputational risk for the employer
- TVs can be good for some members so will be appreciated
- Will have effect on accounting figures

This question was generally well answered. It was a relatively straightforward question and gave well-prepared candidates who structured their answers well an opportunity to score well. It is important, however, for candidates to consider carefully the number of marks available. In part (i) for example, many candidates gave overly long answers wasting valuable time with no prospect of scoring sufficient marks to justify the time spent. In part (iii), those candidates who clearly set out their answers showing advantages/disadvantages for all parties could easily score well. Overall this question was one that required students to clearly set out answers that covered sufficient breadth and did not focus too much on one aspect of the issues at hand.

2 (i)

- Key assumption is discount rate
- ½ mark for any sensible reason why discount rate is key
- Possibly splitting the assumption for liabilities pre and post retirement if this reflects approach taken to investment
- Or having discount rate vary over time
- Duration of liabilities should be taken into account
- For a valuation to satisfy SFO, then would expect to use a market discount rate
- e.g. Using a market implied discount rate for each asset class being invested in;
- With appropriate allowance for risk premium for real assets such as equities;
- Which may be in the range 0–3% considering historic experience;
- Prudence should be allowed for
- As well as the sponsor's covenant
- Could assign fixed interest investments to pensioners

Price inflation

- Important for pension increases, in payment and deferment, and for earnings.
- Long term RPI assumption can be derived from difference between conventional and index linked gilt yields
- Possibly with adjustments for market supply or other considerations
- Such as inflation risk premium
- But given scheme increases are statutory minimum, also need assumption for CPI increases
- No assets currently available to give market level of future CPI
- So typically assume 0.5–1% less than RPI in long term
- Actives need an assumption for earnings growth
- Starting point could be UK experience, e.g. 0.75–1.5% in excess of RPI over long term
- But may consider actual scheme experience, both for inflationary and promotional increases
- and employers' view of plans
- long term, not just recent experience
- Pension Increases – take account of inflation assumption above
- Together with any statutory cap (e.g. 2.5% LPI)
- Need allowance for increases in payment and in deferment

(ii) **Discount Rate**

- Allow for actual investments, or intended asset split based on SIP
- Assume strategy is to match pensioners with approx 50/50 gilts/bonds split
- Assume that pre-retirement liabilities approx. 50/25/25 equity/gilts/bonds
- Give pre-retirement of
- $0.5 * (2.2 + 2.0) + 0.25 * 2.2 + 0.25 * (2.2 + 0.4) = 3.3\%$
- Post retirement assume 75/25 split (say)
- Gives $0.75 * 2.2 + 0.25 * 2.6 = 2.3\%$

Inflation

- $RPI = 2.2 - 0.4 = 2.6\%$ p.a.
- possibly minus inflation risk premium of 0.2% say to give 2.4%
- $CPI = 2.6 - 0.7 = 1.9\%$ p.a.

Earnings Growth

- Set at $RPI + 1.5\%$, say $= 2.6 + 1.5 = 4.1\%$ p.a.

Pension Increases in payment

- RPI is 2.6% so RPI max 5% could use 2.6%
- with possibly a small deduction for the cap
- For RPI max 2.5% larger deduction, so assume 2.3% say

Revaluation

- Use CPI of 1.9% even though cap could apply
- Cap is over whole deferment period so unlikely to bite

(iii)

- Assumptions effect pace of funding, not cost of providing benefits
- Technical provisions need to be calculated using a basis that has been set prudently
- The assumptions need to be set taking account of the employer's covenant
- They have said that they can't afford higher contributions, but there has been a large increase so that doesn't necessarily imply a weak covenant
- However the sector is declining which suggests that this is not just a short term downturn
- Trustees will probably want more details of business plans and forecasts
- And a full covenant review
- Decide on what company can afford
- Over 15 year gilt yield has duration of around 13–14 years
- Liabilities duration is 20 years so there is a large mismatch in the duration
- Depends on assets held – if all in short term gilts then yield may be appropriate, or possibly too long
- Likelihood is that pension scheme invested in longer term gilts and bonds to match liabilities
- If this is the case then suggestion seems reasonable
- Yields currently very low due to low interest rates, the euro debt crisis and quantitative easing

- Yield is higher at longer durations due to upward sloping yield curve
- Because downward pressure is expected to ease in medium to long term
- This has not always been the case and it will not always be like this
- So this method could produce a lower yield in future, but Trustees can't just pick method that gives highest yield, need to be consistent
- This change would increase pre-and post-retirement discount rates by 0.8%
- Assuming no other assumptions change because of it
- However, will also need to calculate inflation consistently
- i.e. looking at inflation of same duration
- possibly using BoE spot rates which are published by duration

- A 1% change in either net discount rate is expected to make around a 15% difference to liabilities
- For both pre-and post-retirement discount rates
- So each change would result in a 12% reduction to liabilities
- So around 25% combined to non-pensioner liabilities and 12% to pensioners
- But an increased inflation assumption will probably reduce this.
- Although this would only have limited change as pre 97 pensions have fixed increases

- Change to ERP and bond yield would result in pre-ret rate of 4.4% and post-ret rate of 3.05%
- ERP of 3.5% implies very strong employer covenant which appears not to be case
- In fact current ERP of 2% seems high given employer's current position
- And level of investment in equities also high
- Will depend on employer covenant
- Might be better to just use higher ERP in Recovery Plan calculations
- where prudence is not required
- Increase to bond yield seems more reasonable
- Although bond yield suggested has short duration
- Should probably take account of re-investment risk by reducing rate by 0.1% say
- Giving post-ret rate of 3%
- Change of 1.1% to pre-ret yield would reduce pre-ret liabilities by around 16.5%
- Change of 0.7% to post-ret would reduce all liabilities by around 10%.

- Given difference between commutation factors and actual cost of pension then this is important assumption
- Therefore important that trustees consider prudence
- should look at actual scheme experience over last few years
- weighted by size of cash taken
- as members with larger pensions often have better advice and need cash less so take more pension
- and consider if there is signs of change in take-up rate

- a prudent assumption is always going to be less than 100%
- if experience is 100% then could consider compromise of 85% or 90%
- If assume that max cash is approximately 25% of liability
- then assuming 100% cash will reduce non-pensioner liability by
- $\text{MaxCash\%} \times \text{Change in Cash Taken\%} \times \text{Difference in value of pension and cash}$
- $= 25\% \times 25\% \times 50\% = 3.125\%$
- As cash factors are so far from cost neutral it may be time for a review

- There are various studies which indicate that CPI is between 0.5% and 1.0% lower than RPI over the long term.
- Therefore an assumption of 1% seems a little generous and 0.7% is reasonable
- However a 0.3% change would only affect revaluation in deferment
- so would reduce deferred liabilities by around 4.5%
- and active liabilities, but only by a small amount which would depend on withdrawal assumption

- Earnings increase is a long term assumption
- recent experience may not be indicative
- especially as there has been a recession and wages have been kept low whilst inflation has remained high
- could even argue that there will be a period of catch up so wages could accelerate
- in general wages would expect to go up at least in line with RPI
- however employer knows what long term plans there are
- if budget is for RPI minus 1% then could use this in short term
- reverting to RPI plus a margin in long term.
- Using RPI minus 1% is a 2.5% change in net discount rate so would reduce active liabilities by around 38%.
- The regulator has removed the 10 year trigger for length of recovery plans so increased length not an issue in that respect
- although was always just a trigger and not a target
- doesn't need to tie up with duration possibly better to look as average future working lifetime of actives, or time until last active retires
- Trustees need to consider covenant again, but also affordability
- Doubling length of Plan would not halve the payments required, due to the effect of interest
- Using the pre-ret rate of 3.3% a10 is approx 8.4 and a20 approx 14.5
- so payments would be $36 \times 8.4 / 14.5 = 20.9$

Key to this question was showing an ability to identify the key areas to be covered, and then covering all of these areas in sufficient depth to score all of the marks. There was a significant variation in the marks achieved on this question. Those who scored well showed an ability to cover not only the mathematical aspects of the points to be discussed, but also were able to relate the results to the issues for trustees in part (iii). Given the number of marks available for the latter part of the question, a structured answer was important

to enable candidates to clearly demonstrate their knowledge. It is particularly important in questions such as these for students not to jump in half way through the answer, but to start with the basics and build up their answers to show the depth of knowledge and application required for a pass at SA.

3 (i)

- Investment returns lower than expected
- There has been a recession
- By definition the scheme has been open for less than 10 years so return seeking assets not had time to smooth out volatility
- Members have not paid the maximum 5%
- So lost out on matching contributions too
- Annuity costs higher than expected
- (any explanation why annuity costs are higher)
- Expenses higher than expected
- Members have chosen to invest in low performing funds
- Either by choice for security as nearing retirement or risk averse
- All members that have retired would have been within 10 years of retirement when joining
- So lifestyle choice might have been default and investment might have been in bonds/cash
- Or by poor choice
- Members have chosen different benefits on retirement
- e.g. different pension increases or larger dependants' pensions
- Or retiring early
- In a DB scheme accrual generally costs more as members get older
- As discount rate pre-retirement normally higher than earnings assumption
- To provide similar accrual at each age in DC scheme would require age-related contributions
- With flat rate younger members accrue more and older members less
- Legislation changes e.g. sex discrimination so annuity rates same for males and females
- This would not have been taken account of when scheme set up
- Earning could have increased more than expected
- DB benefits are related to final salary so would have increased in line with earnings
- DC would have had higher contributions, but not enough to make up difference
- DB benefits could have improved
- e.g. commutation factors improved so less pension given up for same cash
- DB members could have taken less cash than assumed when setting DC contributions
- High inflation over last 10 years has increased DB benefits

(ii)

- Career Average Revalued Earnings (CARE) scheme.
- Accrual rate could be same as for the final salary scheme

- But average earnings over the career will be used to calculate pension rather than final salary
 - Each year's salary will be revalued to retirement
 - Usually in line with price inflation
 - Lump sum benefits can also be expressed in a similar manner.
 - Removes risk of higher than expected salary increases
 - Should have lower cost as price inflation generally less than wage inflation
-
- Cash balance scheme
 - A percentage of salary is set aside each year for each member
 - The employer undertakes to ensure that the annual contribution will grow by a specified amount each year
 - Which is linked to prevailing interest rates or some other index
 - At retirement the member's minimum accumulated fund will be determined by the specified minimum rate of growth for each contribution.
 - Accumulated fund value is used to purchase the required form of benefits when those benefits become due.
 - As well as removing risk of high salary increases
 - Longevity risk is also removed
 - Or cost of annuities if they are bought
 - Pre-defined investment return will reduce investment risk as can be more easily matched
-
- Longevity adjustment factors
 - Scheme retirement age is increased for future service in light of increasing longevity
 - For example, a 2 year increase in life expectancy could mean a 1 year increase in retirement age
 - This reduces longevity risk for the employer

Any comment

(iii)

- Can either reduce employer DB conts or increase DC conts
- Or probably a combination of both

Reducing DB

- Introduce members' contributions
- Either at a fixed rate e.g. 5%
- Or as a fixed proportion of the contribution rate at latest valuation
- e.g. if contribution rate was 30% and members pay 1/3rd then they contribute 10% until next valuation
- Reduce accrual rate
- Have option to keep old accrual rate by paying higher member contributions
- Reduce benefits to statutory minimum if not already there
- i.e. CPI max 2.5% pension increases for future accrual
- and revaluation

- Change final salary definition
- Remove bonuses, extra benefits if they are included
- Put cap on pensionable salary
- Or limit increases to fixed amount per annum, or index such as RPI
- Reduce benefits to statutory minimum
- Increase NRA
- More risky investment strategy so contribution rate lower

Increasing DC contributions

- Have higher fixed contribution rate
- Based on review of contribution rate
- One-off top-up to accumulated fund
- Using up to date assumptions and DB benefits, including any proposed changes
- This could be reviewed triennially along with DB scheme
- Or higher maximum for matching contributions
- To match accrual in DB scheme could have age related contributions

Taking on DC risk

- Could have guaranteed investment return
- Or minimum of return of contributions
- Within scheme or through use of with-profit fund
- Could pay pension from fund at retirement
- With guaranteed annuity rate
- Or conversion on terms set at each triennial valuation
- Would be cheaper than insurer's annuity costs
- As not taking into account insurer's expenses, solvency margin etc.
- DB underpin
- Could consider collective DC of other risk sharing options

The answers to this question were variable, with some candidates scoring very well. Again, structure to the answer is important, using all of the information in the question, to make sure that a sufficiently wide ranging answer is produced. Breaking the question down into separate headings and covering all of the relevant issues for each gave the best opportunity to score well.

END OF EXAMINERS' REPORT