

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **EXAMINERS' REPORT**

April 2013 examinations

### **Subject ST4 – Pensions and other Benefits Specialist Technical**

#### **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 2013

## **General comments on Subject ST4**

This subject examines the ability of candidates to apply core actuarial techniques and concepts, together with specific knowledge of pensions and other benefit arrangements to simple, but practical situations.

The examiners therefore look for candidates to apply their knowledge of the core reading to the specific situation that the examiners asked, having read the question carefully. Too many candidates write around the subject matter of the question in more general fashion, or focus on one aspect of the issue at great length, in either case gaining few of the marks available.

Good candidates demonstrate that they have used the planning time well – an attempt to get a logical flow is a big advantage in making points clearly and without repetition. This also enables candidates to use the latter 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 latter parts). Time management is important so that candidates give answers to all questions that are roughly proportionate to the number of marks available.

## **Comments on the April 2013 paper**

The overall standard of scripts was broadly as expected, and this was reflected in a similar pass rate to the norm. There was no indication that candidates consistently found any one of the questions tougher than the others – average total marks were similar for all questions. More detailed feedback is provided on each question below.

1 (i)

- Salary increases are assumed to be awarded uniformly over the inter-valuation period
- The valuation assumptions include no allowance for pre-retirement mortality...
- ...Or other decrements, e.g. withdrawal, early retirement
- No change to valuation assumptions (if candidate assumes a basis change and gets the resulting calculations correct, award this half mark)

Expected Actives Liability at 1 January 2013

$$\begin{aligned} &= 50 * 1.06^3 + 24\% * 8 * 3 * 1.06^3 \\ &= £59.55 + £6.86 = £66.4 \text{ million} \end{aligned}$$

Estimated Actives Liability at 1 January 2013

$$\begin{aligned} &= £66.4 * (1.03 / 1.04)^3 \\ &= £64.5 \text{ million} \end{aligned}$$

Estimated Gain on actives liability = £1.9 million

(ii)

- Investment returns are assumed to be earned uniformly over the inter-valuation period
- Contributions are assumed to be received uniformly over the inter-valuation period

Estimated Deferred Liability at 1 January 2013

$$\begin{aligned} &= 20 * 1.06^3 \\ &= £23.8 \text{ million} \end{aligned}$$

Estimated Total Liabilities at 1 January 2013

$$= £64.5 + £23.8 = £88.3 \text{ million}$$

Estimated assets at 1 January 2013

$$\begin{aligned} &= 65 * 1.07^3 + 3 * 5 * 1.07^{1.5} \\ &= £79.63 + £16.60 = £96.2 \text{ million} \end{aligned}$$

Estimated Surplus at 1 January 2013 = £7.9 million

(Give credit for alternative methods e.g. estimating actuarial gain / loss on other elements and summing.)

Examples of other methods:

$$\begin{aligned} \text{(i)} \quad &50 \times 1.06^3 + 0.24 \times 8 \times (1.04^{0.5} \times 1.06^{2.5} + 1.04^{1.5} \times 1.06^{1.5} \\ &+ 1.04^{2.5} \times 1.06^{0.5}) \\ &= £66.2m \end{aligned}$$

Although averaging could be used in the latter part e.g.

$$0.24 \times 8 \times 3 \times 1.04^{1.5} \times 1.06^{1.5}$$

And the actual liability is:

$$50 \times 1.06^3 \times (1.03)^3 / (1.04)^3$$

$$+ 0.24 \times 8 \times (1.03^{0.5} \times 1.06^{2.5} + 1.03^{1.5} \times 1.06^{1.5} + 1.03^{2.5} \times 1.06^{0.5}) \\ = £64.4m$$

This gives a gain of £1.8m (66.2 – 64.4)

*Numerical questions often result in candidates scoring either well or badly, with little in between. This question was no exception. It is important for candidates to be able to demonstrate an understanding of the theory in such a question, and a methodical approach will always pay dividends.*

(ii) Using an analysis of surplus

Investment gain

$$\text{Expected assets} = 65 \times 1.06^3 + 5 \times (1.06^{2.5} + 1.06^{1.5} + 1.06^{0.5}) = £93.8m$$

$$\text{Actual assets} = 65 \times 1.07^3 + 5 \times (1.07^{2.5} + 1.07^{1.5} + 1.07^{0.5}) = £96.3m$$

$$\text{Investment gain} = £2.5m (96.3 - 93.8)$$

Contribution gain

$$\text{Actual contributions} = 5 \times (1.06^{2.5} + 1.06^{1.5} + 1.06^{0.5}) = £16.4m$$

Expected contributions =

$$0.24 \times 8 \times (1.04^{0.5} \times 1.06^{2.5} + 1.04^{1.5} \times 1.06^{1.5} + 1.04^{2.5} \times 1.06^{0.5}) = £6.7m$$

$$\text{Contribution gain} = £9.7m (16.4 - 6.7)$$

Surplus

$$\text{Deficit brought forward} = 5 \times 1.06^3 = (£6.0m)$$

$$\text{Investment gain} = £2.5m$$

$$\text{Salary gain} = £1.8m$$

$$\text{Contribution gain} = £9.7m$$

$$\text{Current surplus} = £8m$$

*As for (i), results were variable.*

**2** (i) *Reasons why the country might adopt such a system of pension taxation*

- The government wishes to encourage private pensions saving...
- ...from both employees and employers...
- ...in order to ensure an adequate level of pension in retirement...
- ...and reduce the requirement for state support in retirement...
- ...for example to reduce the need for means tested benefits
- The system adopted provides a tax incentive to pay into a pension scheme...
- ...to the extent that other forms of saving are subject to tax on investment returns
- Without an incentive workers may be unwilling to lock away savings for a long period
- The tax system is broadly cost neutral regarding the taxation of contributions and benefits...
- ...assuming that the tax rates on the income paid whilst contributing and that received during retirement are the same

- The public finances of the country may make a more generous tax incentive unaffordable
- Fairness – earnings are only taxed once – either on receipt of income or on receipt of pension

*This bookmark question was relatively well answered.*

(ii) *General Advantages (apply to both workers)*

- Tax-free investment returns
- Income tax could be lower in retirement (if a different rate for pensions is applied or tax rates change)

*General Disadvantages (apply to both workers)*

- Money locked away and cannot be accessed until retirement
- Risk that income tax rate may be higher in retirement

*Key advantage for Worker earning \$140,000*

- **If worker has income less than \$100,000 in retirement, 40% tax saving is received on contributions and only 20% tax payable on pension**

*Relatively well answered by all most candidates.*

(iii) *Ways to reduce costs*

- Restrict the tax relief on contributions to 20%
  - + Will result in less tax relief for given amount of contributions
  - + Removes the loss of tax revenue that occurs when high earners receive 40% tax relief on contributions and pay 20% tax on benefits
  - + Fairness e.g. perceived as fairer – all citizens get the same rate of tax relief
    - Could result in double taxation for some high-earners: 20% relief on contributions but 40% tax on benefits, resulting in overall tax rate of more than 40%
    - Could discourage pension saving by high-earners, adversely affecting the pensions industry
    - Could encourage employers to remove / reduce pensions for workers if they cannot benefit from them to the same extent, resulting in lower pension provision all around
    - Administering different rates of income tax and pension tax relief could cause administrative difficulties
- Place an upper limit on the annual amount of contributions that can be paid
  - + Will reduce tax relief where citizens currently pay more contributions than the cap
    - OK for citizens with long, stable earnings, but makes it difficult for citizens with short, volatile earnings to save sufficient funds
    - Difficult for older citizens to make up a shortfall in pension saving, e.g. due to poor investment returns close to retirement
    - Complications over indexation of limits

- Place an upper limit on the accumulated value of an individual's pension savings
  - + Caps the tax relief given over the working lifetime of an individual
  - Citizens who have control over their earnings and pension contributions can aim to avoid higher rate tax altogether later in their career
  - How should the limit be administered for members with benefits in several pension schemes drawn at different times?
  - What to do about citizens already over the limit – risk of retrospective taxation?
- Place limit on the value of fund eligible for tax-free investment return
  - + Reduces the cost of tax relief on investment returns
  - + Encourages workers not to over-fund pensions, hence reduces tax relief on contributions
  - Difficult to administer
  - E.g. if a fund is over the limit, which assets returns within it should be taxed?
- Reduce state-funded benefits for retirees with an income above a certain level (means-testing)
  - + Saves money as state benefits directed to those who need them the most
  - Complex to administer
  - Some less well-off pensioners may be discouraged from applying for means-tested benefits and be worse off
  - Assuming there is a fixed amount of state benefits to offset, this hits moderately affluent citizens harder than the super-rich

Will need to give credit for any other sensible, distinct suggestion (though limit to four). Note some advantages / disadvantages may apply to more than one suggestion – credit only if well-argued and clearly relevant to the option.

*Tended to be well answered by those with a structured approach to the solution. Many did not cover sufficient breadth, however. To score well on this type of question, candidates must identify four clearly different methods, giving sufficient discussion of all of them, not just the first two, say.*

(iv) *President's statement*

Future contributions

- In the short term the president's statement is correct
- Current tax revenues will increase because there will no longer be tax relief on pension contributions
- However in future tax revenues will be lower because benefits from pension schemes will no longer be taxable
- **Therefore the change will bring forward tax revenue in time rather than generate additional tax revenue**

- Although this depends on the overall net effect. If the pension system doesn't balance (say is a net cost to the government) then this position will reverse (i.e. become a net gain to the government)
- To the extent that "higher earners" will no longer be able to claim 40% tax relief on contributions and will not pay 20% tax on benefits, the change may have a net effect of raising tax revenues
- If fewer people are encouraged to save, there may be a saving on investment income relief

**Accumulated funds**

- The change should only apply to benefits taken in respect of future pension contributions
- Otherwise it would amount to a "tax giveaway" in respect of pension funds accumulated at the date of change, which will escape tax altogether
- Separating accumulated and future pension benefits will add administrative complexity
- Particularly for defined benefit schemes, where the timing of the contribution may not be the same as the timing of the benefit promise
- Unfunded pension schemes would be a particular problem

*Candidates need to produce a structured response to score well on this type of question.*

**3** (i)

- **The benefits are defined, hence benefits payable should be unchanged**  
However, security of benefits is reduced due to lower funding level
- Sponsoring employer will be required to make good funding shortfall
- This may lead to a reduction in future benefits...
- ...or cessation of benefit accrual altogether
- Accrued benefits are normally better protected by law so less likely to be affected
- But if employer is unable to make good funding shortfall then accrued benefits may be reduced as well
- Reduces chance of discretionary benefits
- Possible reduction in transfer values paid out
- Possible impact on member options (e.g. early retirement) if consent required

*Relatively well answered, but needs sufficient breadth to score well.*

(ii)

- The bond fund may not be a good match for the Scheme's liabilities

For example:

- Currency risks – mix of currencies in global bond fund may not be similar to currencies of liabilities
- Inflation risks – Scheme may have inflation-linked liabilities not matched by conventional bonds

- Duration / reinvestment risk if the term of the liability exceeds that of the bonds (or if bonds to not provide income at same time as liabilities)

Other:

- Government vs. corporate bonds – do government bonds offer a high enough yield to meet the funding assumptions or should corporate bonds be considered?
- Security / credit risk – does the fund invest in the bonds of countries with low credit ratings
- A single bond fund may not provide sufficient diversification
- Lower expected return on bonds vs. other asset classes may adversely impact liability calculation and contribution rate

*Relatively straightforward for those candidates who focused on the specifics of the question.*

(iii)

- The precise objectives of a particular ALM exercise need to be set so that appropriate data can be applied to the model
- These objectives may indicate the acceptable level of risk, the funding target against which the risk is to be considered, the secondary objectives given that the first is met and the investment strategies that are to be considered
- The time period over which these probabilities apply and the number of simulations to be run will also need to be set
- An ALM study projects the scheme's asset and liability cashflows
- usually using a stochastic model for the economic cashflow elements and a deterministic model for the demographic elements. For a given investment strategy, an ALM study will allow estimates to be made of the probabilities of future events in the lifetime of the scheme
- For example, the probability that funds will be sufficient to meet benefits...
- ...or the probability that additional financing will be required
- These projections are carried out for a range of investment strategies
- Any suitable stochastic investment model will require a large number of input parameters covering the expected returns and standard deviations of return on each asset class, the degree of correlation (for example equity returns and price inflation), etc.
- A typical assumption will be that bonds are a lower risk investment than equities...
- ...but with a lower long-term expected return
- Hence, for different equity:bond asset allocations, the ALM study will illustrate:
- The reduction in risk obtained by holding fewer equities and more bonds, and
- The additional cost (contributions required) arising from the lower expected returns
- The output will depend on the parameters used for the stochastic investment model of the asset class returns used in the ALM



- Given that the particular parameters chosen will not be borne out in practice, it is important to test these investment policies for robustness under alternative assumptions. The sensitivity to assumptions about expected returns and risks should be explored to test the robustness of the conclusions

*To score well, candidates need to apply the bookwork to the specific scenario – too many candidates simply regurgitate bookwork lists about asset-liability modelling.*

(iv) *Practical issues*

- Which equities will be kept and which will be sold?
- What will be the overall timeframe for the switch?
- Will it be done in one go?
- ...Or over several smaller switches?
- Can the cashflow of the Scheme (net positive or net negative) be used to accomplish some of the switch?
- Is the intention to switch assets and move to a lower-risk investment strategy as soon as possible?
- ...Or will the managers seek to pick an opportune time for the switch?
- Based on equity and bond market levels / yields
- ...Or the Scheme's funding level
- Accepting the risk that they might switch at a poor time
- ...Or that the switch may not happen for a long time
- What are the transaction costs?
- How can these be minimised?
- Are there any liquidity issues affecting the sale of the equities or the purchase of the bonds?
- Can an investment manager / adviser be appointed to effect the switches (or is there one in place?)
- How should the changes be communicated to members?

*Less well answered, requiring some application of knowledge to the scenario.*

**4** (i) *Equation of value*

$$Ea_x = P * v^{(NRA-x)} * a_{NRA} * l_{NRA} / l_x$$

where:

$x$  = age at the point of early retirement

$NRA$  = normal retirement age

$E$  = early retirement pension

$P$  = the pension that would be payable from  $NRA$

(This is the formula from the Core Reading. Credit can be given for an alternative correct formula provided that the terms are defined.)

- The formula can be adjusted to allow for any pre-retirement benefits that are also surrendered by taking early retirement and for any additional post retirement benefits.

Calculation:

- Assume pensions paid annually in advance
- Assume annual pension increases on anniversary of retirement
- From tables,  $l_{65} = 9,648$  and  $l_{58} = 9,865$
- $a_{65} = 13.666$ ,  $a_{58} = 16.356$  at net 4% (7%–3%)
- $E / P = 1.07^{(-7)} * 13.666 / 16.356 * 9,648 / 9,865 = 0.509$
- Expressed as a percentage of accrued pension revalued to age 58, early retirement factor
- $= 0.509 * 1.04^7 = 67\%$

Note: Tables work with annual in advance pensions. Give credit if candidate assumes pensions paid continuously (for example) but says the effect/error is minimal as we're looking at a ratios of annuities.

Alternative equation of value, based on ERF applied to pension at date of retirement

$$ERF * Ea_x = P * (1+r)^{(NRA-x)} * v^{(NRA-x)} * a_{NRA} * l_{NRA} / l_x$$

then

$$ERF = (1+r)^{(NRA-x)} * v^{(NRA-x)} * a_{NRA} / a_x * l_{NRA} / l_x$$

*As for many numerical question, this did separate candidates quite well.*

(ii) *Different active / deferred factors*

- If the scheme is being funded on a basis that projects future pensionable salary increases then the equation of value differs for the two groups
- For deferreds, the NRA pension includes future deferred revaluation
- For actives, the NRA pension includes future pensionable salary growth
- Funding bases normally include a higher assumed rate of salary growth than deferred revaluation
- So using the equation of value method would give a higher early retirement pension to an active member than an equivalent deferred pensioner
- This would effectively mean that the “withdrawal profit” that would occur when an active member becomes a deferred pensioner is used to enhance the member's pension if, instead of becoming a deferred pensioner on the date of leaving, he instead takes early retirement from active status...
- ...rather than being a source of surplus for the scheme as if he were becoming a deferred pensioner
- Arguably a member should not benefit from assumed future pensionable salary increases if he is retiring from service and will not receive them

- The employer may wish to have the flexibility to provide greater early retirement pensions to some employees for commercial reasons (to manage workforce numbers)
- Perhaps using early retirement factors based on the deferred pensioner equation of value if the member is taking early retirement “at his own request”, and early retirement factors based on the active member equation of value if the member is taking early retirement “at the employer’s request”, e.g. redundancy
- Although for redundancy it depends on the package and whether the employer wants to use enhanced scheme benefits or other employment benefits (e.g. cash)
- For active members, also need to consider whether an allowance for future benefit accrual should be included in the equation of value
- For example, if the employer wishes to provide special ill-health retirement benefits
- The allowance or expectation of discretionary benefits may differ for actives and deferred pensioners and this may be reflected in the factors
- Some benefits may differ for actives and deferred pensioners and these may be reflected in the factors e.g. death benefits
- The assumptions may differ for actives and deferred pensioners and these may be reflected in the factors e.g. post-retirement mortality
- The ERF for deferred pensioners may take into account the value to the alternative transfer value deferred pensioners may take

*There were many points to be made here, and candidates sometimes struggled to use the breadth available.*

**5** (i) (a) *Mark to market*

- 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 market rate of inflation is derived from as the difference between the yields on fixed interest and index linked bonds

Suggested assumptions:

- Discount rate = 3% (give credit if corporate bond yield used adjusted for credit risk e.g. 3.6%)
- Inflation rate = 3% – 0.5% = 2.5%

(b) *Asset-based discount rate*

- An implied market discount rate is determined for each asset class
- E.g. for fixed interest securities this is based on the redemption yield
- Or for equities the expected dividend income and sale proceeds
- The discount rate used is the weighted average of the individual discount rates based on the scheme’s asset allocation

Suggested assumptions:

- Inflation assumption = 2.5% as above
- Discount rate for government bonds = 3%
- Discount rate for corporate bonds = 4%
- Discount rate for equities = dividend yield + inflation + real growth
- = 2.5% + 3.5% + 1% (say) = 7% (no marks for silly numbers)
- Weighted average discount rate = 25% \* 3% + 25% \* 4% + 50% \* 7% = 5.25%
- (Give bonus if credit risk adjustment explicitly included in corporate bond yield)

*A structured comparison was easy to achieve here, and those with a simple approach did well. It is important to clearly demonstrate understanding of the differences.*

(ii)

- Deriving the pension increase assumption will require a probability distribution for the inflation assumption...
- ...rather than just the expected value
- With the probability distribution we can calculate the expected value of price inflation subject to the floor and cap
- Algebraically or stochastically
- The variance (or standard deviation) of the probability distribution will be important...
- ...as the greater this is, the more likely price inflation is to reach the cap and floor
- An assumption for the variance can be made by considering the historic volatility of price inflation...
- ...or looking at option prices which may give a market view
- If there is a market in "Limited Price Indexation" bonds then the yield on these can be used
- In practice, because the price inflation is towards the upper end of the pension increase range, a simple deduction may be made to the price inflation assumption...
- ...say 0.25%...
- ...as more detailed methods may be considered spurious accuracy

(Give credit for a comprehensive description of a replicating portfolio method.)

*Candidates need to give sufficient detail to score well.*

(iii)

- The preference would depend on the sponsor's attitude to financial obligations and risk in the short, medium and long term
- Opportunity cost: the employer may prefer not to pay more to the scheme than is strictly necessary in the short term
- As it may have other things it wishes to do with the money
- For example investment projects or dividend payments
- Hence it may have a preference for more realistic assumptions.

- However, to the extent that this would then risk an unexpected increase in the future level of contributions this may not be acceptable
- Prudent assumptions result in greater stability and predictability of contributions:
- If the risk of overpaying in the short term is viewed as being preferable to the risk of having to find extra resources in the future, there will be a preference for a prudent approach to the setting of the assumptions
- It will also be affected by the ability of the sponsor to benefit from any overpayment.
- E.g. a refund of surplus
- Or offsetting against the cost of future benefit accrual
- Scheme members / trustees may prefer prudent assumptions to improve security (and apply pressure for prudent assumptions)
- Best estimate assumptions are more consistent with accounting assumptions

*This offered an opportunity to demonstrate deeper understanding of the issue, which was not taken by all candidates.*

**6** (i)

- It might be an attempt to improve the security of non-state pension benefits
- For example, members will be able to challenge the sponsor in the event of a poor funding level...
- ...or risky investment strategy
- To enable members to plan and make informed decisions regarding their pension...
- ...e.g. changing contribution rates, investment strategy
- It encourages good pension scheme governance
- Audited accounts reduce the scope for fraud
- The state may want to encourage the take-up rates of private sector pension schemes
- In order to reduce the reliance on state benefits
- Consumer protection – the state may wish to ensure via benefit statements that members understand their benefits...
- ...and are not misled...
- ...for example regarding the impact of fees and charges
- Poor disclosure can lead to problems for providers if members are given unrealistic expectations...
- ...such as over-optimistic defined contribution projections...
- ...or defined benefit statements that do not highlight the risk of reduced benefits in the event of discontinuance or sponsor insolvency

*Relatively well answered – care needed not to be too UK specific if working in the UK.*

(ii)

- Different members may have different investment strategies
- 7% may not be a suitable assumption for the various funds available...

- ...after allowing for the impact of fees
- A fixed 7% each year will not take account of varying market conditions
- The projection could be misleading as it does not allow for the impact of inflation on the purchasing power of future income...
- ...giving members an unrealistic expectation of what their pension can buy
- Using current annuity rates does not allow for expected improvements in longevity before the member retires
- Providing a single projection may give the impression that there is a high degree of certainty regarding the member's benefit...
- ...but the investment return achieved could be very different from 7%...
- ...and annuity rates can change
- Basing the projection on the member's current fund does not illustrate the impact of future contributions
- Annuity rate does not take account of the options the member has at retirement (e.g. indexation, spouse's pension, retirement age)

*Many candidates gave too sketchy answers.*

(iii)

- Show projections using a range of assumptions
- To highlight that the outcome is unknown and illustrate sensitivity
- Adjust the 7% return assumption to allow for market conditions...
- ...and investment strategy (different assumptions for different funds)
- ...taking into account the charges on the funds
- Discount the result by a price inflation assumption to show the amount of pension "in today's money"
- Show separate results for current fund and future contributions
- Include an allowance for longevity improvements in the annuity rates used
- Include caveats that the result is uncertain and could be greater or less than the range shown
- Illustrate both the expected fund value and pension amount at normal retirement date to highlight the importance of the annuity rate
- Include caveat that annuity rates can change
- Upgrade to an interactive, web-based system that allows members to test scenarios

*This tended only to be answered well by those who gave a good solution to the previous question.*

**7**

(i) *Viable ongoing / In distress*

- The sponsor can be described as viable ongoing if the deficit is financially manageable...
- ...with a reasonable likelihood of it being paid off over an appropriate period
- The sponsor can be described as in distress if the deficit is financially unmanageable given sponsor's resources...
- ...with no realistic likelihood of removing deficit over appropriate period

- **In practice, there is a range from clearly viable to clearly distressed sponsors and an element of subjectivity may be required to assess the financial strength a sponsor lying in the middle of this range.**

*Discussion*

- Need to assess the employer's covenant, i.e. its ability and willingness to pay sufficient contributions
- To meet benefit payments as they fall due
- The trustees may wish to seek additional help, including perhaps the appointment of an independent expert, to assess the covenant as they may not feel sufficiently experienced for this task
- Consider extent to which employer is legally obliged to fund the deficit (if any)
- The deficit of £45m could be regarded as loan to sponsor
- Consider size of deficit relative to size of employer
- ... its assets (which could be realised to repay the "loan" if required)
- ... its earnings (which can be used to meet regular "repayments" to the scheme)
- ...consider other measures of deficit as well, i.e. funding or buyout
- Particularly if scheme were discontinued
- Consider other company debt – does it rank above the pension scheme deficit in the event of insolvency?
- For example, is it secured on the property?
- Investigate value of intangible assets on balance sheet – is the figure given realisable on insolvency?
- The same for the debtors – are these all expected to pay
- Review cashflow statement – are profits reflected in cash which can be used to fund scheme?
- Consider if there is a parent company which would make good any shortfall
- Various ways to assess credit risk, e.g.
  - Business outlook
  - Financial metrics
  - Implied market default risk
  - Credit ratings
  - Other risk-based measures e.g. levies
  - Probability of default using Merton-type model
  - Independent business review
  - Meet regularly with finance director or board of sponsoring employer to discuss financial position and plans for the future

*Conclusion*

- **In this instance, the balance sheet of the employer appears able to support the pension deficit**
- **And the employer's annual profit is more than 20% of the deficit**
- **Which indicate that the employer should be considered more towards the viable ongoing end of the range**

*Other points*

- However, the pension scheme has a similar size to the employer's balance sheet
- And the position could change, for example if the scheme has poor investment returns
- Could explore actual numbers, e.g. value of assets if we wrote off debtors and intangible assets = £70m
- Comment on liquid assets, e.g. level of cash at £5m, how "liquid" is the stock at £40m – will depend on nature of business

*This should be relatively straightforward with a small degree of application. Answers tended to be light on detail with insufficient depth.*

(ii) *Actions considered*

- Move to a more matched investment strategy, e.g. a higher weighting in bonds ...
- ...to reduce the risk of the funding level getting worse
- Invest in assets that pay out in the event of sponsor default...
- ...such as derivatives including credit default swaps
- Consider alternatives to cash payments if the sponsor is unable to afford them...
- ...such as a charge on the sponsor's fixed assets
- ...or parent company guarantee / bank guarantee / letter of credit
- Include ratchets in contributions so that if the sponsor's financial position improves...
- ...then the scheme shares in this improvement
- Set up contingent contributions so the sponsor has to make up the deficit more quickly if the scheme's financial position deteriorates...
- ...although this could cause problems if the employer cannot afford the contributions...
- ...it may be better to permit a weaker employer to defer contributions to ensure it stays in business
- Close to future benefit accrual or reduce future benefits...
- ...in order to protect accrued benefits as much as possible
- Suspend discretionary benefits
- Continue to monitor covenant and put into place procedures such that the sponsor must inform the trustees of certain things e.g. restructuring debt
- Review the use of insurance e.g. buy out the pensioners
- Review any member option terms or consent requirements with regard to options which are costly

*Reasonably well answered.*



(iii) *Pension increase exchange*

Advantages

- **Deficit reduces as liabilities lower in both actual terms and as measured on funding basis**
- With no additional up-front cash contribution requirement...
- ...beyond the costs of administering the exercise
- Transfer of inflation risk (above a certain level) from employer to members
- Reduced longevity risk as pensions less back-end loaded
- Possible lower investment risk if new pensions easier to match with bonds
- Easier matching may lead to an even bigger saving relative to the buyout cost
- Option may be popular with some members who would like higher initial pension

Disadvantages

- True extent of saving will depend on the assumptions used
- ...loss of upside risk if inflation is lower than expected
- Despite expected 10% saving, risk of selection against the scheme...
- ...for example, members in ill-health taking up offer
- Risk of mis-selling if terms of offer poorly communicated / not understood
- Reputational risk if perceived to be poor value due to expected 10% saving
- Risk that cost of exercise could outweigh reduction in liability if take-up rate is low

*Reasonably well answered, but often insufficient points made to gain full marks.*

## **END OF EXAMINERS' REPORT**