INSTITUTE AND FACULTY OF ACTUARIES

Curriculum 2019

SPECIMEN SOLUTIONS

Subject SA4 – Pensions and Other Benefits
Specialist Advanced

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1 [*based on September 2016 SA4 Q1*]

(i)

- Tax concessions can be granted to registered schemes in respect of retirement savings.
- E.g. occupational pension schemes, personal pension plans, retirement annuity contracts and deferred annuity contracts.
- An "Exempt, Exempt, Taxed" system provides an incentive to save for retirement by providing a more favourable tax environment than applies to ordinary savings from earnings
- contributions by employer may be allowed as business expense and so would be deducted from profits before the calculation of corporation tax
- contributions by an employer may not be classed as a taxable benefit in kind for the employee
- contributions by employer may not be subject to National Insurance contribution deduction
- contributions by employee deducted from personal taxable income before calculation of income tax
- individuals can claim full tax relief on contributions made on their behalf by third parties
- restrictions can apply for high earners
- investment income not subject to tax, though it may not be possible to reclaim corporation tax paid in relation to share dividends
- capital growth not subject to tax
- lump sum death benefit receipts may not be subject to tax (neither income nor inheritance tax)
- although this may depend if they are paid at the discretion of the trustees
- refunds of contributions to early leavers may be taxed at favourable rates, subject to certain limits
- There may be double taxation agreements in place with other countries which reduces the tax paid on certain investment income.
- Pension may be taxed at lower marginal rate as income has fallen

(ii)

For:

- Easier to understand
- Brings tax income forward for the Government
- and possibly increases it if pensioners are in lower tax bracket than workers
- Arguably fairer – under EET the majority of the tax benefit goes to higher and additional rate taxpayers who are in a lower tax band when they retire
- Overall a simpler approach which could lead to lower communication and administration costs for the State and providers
- The State could benefit from the anomalies where benefits are currently exempt from tax e.g. lump sum on retirement
- It may encourage more people to save especially if there is some mis-trust in the current pensions environment e.g. if the price of annuities is seen as too high

- There will be more flexibility for individuals in terms of saving and benefits taken
- It may encourage innovation within saving vehicles

Against:

- Higher rate tax payers could lose out if pension lower than higher rate limit
- Will rules change again so end up with double taxation?
- General feeling is that there will be less incentive to save
- Leading to poorer outcomes
- Will actually make system more complex as people will have pensions under different tax regimes
- If all saving were "non-retirement" then there would be no restriction on when they could be spent and they could be used up before retirement
- Progressive income tax rates discourage people from drawing down their whole pot too quickly under the current EET system. This would be lost.
- Bringing forward income tax means that there will be less collected in the future.
- The costs and complexity of transition and implementation.
- The redistributive nature of the current system is lost i.e. where higher earners pay more tax as they are more likely to fall into lower tax band on retirement.
- The impact on benefits provided directly by the State would need to be considered.
- The emphasis on retirement saving may be diluted which may lead to greater reliance on the State in retirement.

2 [*based on April 2016 SA4 Q2*]

(i)

- The board may want to encourage transfers out of the Scheme
- In order to reduce the investment risk faced by the sponsor
- As well as longevity risk
- … as in particular ,the exercise affects deferred pensioners longevity risk
- And inflation and other risks
- And would possibly reduce the balance sheet deficit
- If the enhanced transfer value basis is weaker than the accounting basis
- Or reduce costs
- If a future bulk annuity transaction with an insurance company is planned particularly as this can be expensive for deferred benefits
- Assuming the enhanced transfer value basis is weaker than the bulk annuity basis
- There may be a very low incidence of transfers on the non-enhanced basis meaning that this aim is not currently achieved
- It may reduce future administrative expenses
- The directors individually may be thinking about taking advantage personally of the enhanced transfers

- The directors may benefit personally if the sponsor gains a financial advantage from other members transferring
- The directors may wish transferring members to participate in the surplus
- … although the 5% enhancement appears low compared to the funding level on the valuation basis
- … but could better reflect the possible surplus on a solvency basis

(ii)

- The director may believe that he can secure a better income by transferring to a defined contribution scheme
- He may be in poor health and not expect to benefit from a lifetime pension
- He may be single and not get any value from any spouse's pension provided by the final salary scheme
- He may prefer the flexibility of income available under a defined contribution scheme
- E.g. a lump sum to pay off debts
- He may not require an income from his pension
- Due to other sources of wealth
- And prefer to hold a defined contribution pension as an inheritance vehicle for his children
- Taking advantage of any advantageous rules governing taxation of death benefits
- He may have concerns over the financial strength of the sponsor
- Especially if he would see a reduction in benefits if the sponsor becomes insolvent
- Early retirement terms in the Scheme may be penal
- or early retirement may not be allowed

(iii)

- The Director risks ultimately receiving a lower income from the defined contribution scheme
- If it suffers poor investment returns
- Or high expenses
- If he lives longer than expected
- Or if inflation is higher than expected
- He risks missing out on possible future discretionary pension increases
- Regulatory risk that the defined contribution pension may not have the required features
- E.g. any beneficial taxation of death benefits could be removed
- The Scheme faces investment risk during the guarantee period
- The risk of selection against the Scheme
- E.g. if the director is in poor health
- And liquidity risk – i.e. the need to realise a large proportion of the fund quickly
- Reputational / legal risk if this is considered to be "mis-selling"
- Possible reputational risk for the MD if the company subsequently fails
- It may lead to further members taking transfer values and lead to a materially smaller scheme with more volatile experience

3 [*based on April 2016 SA4 Q1 (part)*]

(i)

- General – assumptions should contain a degree of prudence consistent with the employer covenant
- … noting any legislative requirements for prudence
- … and with each other so that the basis is considered in aggregate
- Not every assumption needs to allow for prudence
- Inflation – base on difference between fixed and index-linked gilt yields
- E.g. 2.5% − (–0.5%) = 3.00% per annum
- Assume that a bond yield plus risk premium approach is used (or other methodology as appropriate)
- Using separate pre and post discount rates
- … reflecting how the investment strategy might change over time for a closed scheme e.g. is a 20 year duration gilt yield appropriate
- Pre retirement discount rate based on equity returns, e.g. margin over gilts
- Allowing for inflation risk premium
- And allowing for investment management expenses
- E.g. 2.5% + 4% (margin over gilts) – 2% (prudence) – 0.5% (expenses) = 4% per annum
- Post retirement discount rate based on corporate bond yields
- And investment management fees / expenses
- E.g. 3.5% − 0.25% (prudence) – 0.25% (expenses) = 3% per annum
- Pension increases based on inflation assumption
- Adjusted for effect of cap
- E.g. 3.00% − 0.5% = 2.5%
- A salary increase assumption is not required as the scheme is revalued career average

Other valid derivations were given credit.

(ii)

- Governing documentation for the scheme (eg trust deed and rules)
- Announcements to members
- Scheme booklet
- Minutes of Trustee Meetings
- Details of special arrangements for any members
- Details of pension increases granted
- And intentions for the future
- Including any discretionary increases
- Details of actuarial factors used by the Scheme
- Previous actuarial valuation reports and associated documents
- Data relating to the future operation of the Scheme, including:
  - Future investment strategy
  - Any planned benefit changes
  - Events that might affect the sponsor covenant
  - Views on future discretionary practices
- Annual accounts for the Scheme for the intervaluation period
- Full details of the Scheme's assets at the valuation date

- And at the previous valuation date to permit an analysis of experience
- Data relating to longer-term experience of scheme to set demographic assumptions e.g. mortality base table
- Current market conditions e.g. gilt yields
- Covenant review reports

(iii)

- Investment risk - the Scheme's assets may not achieve the investment returns necessary to meet the liabilities
- Interest rate risk – funding position will be volatile in the short term if assets are not matched to liabilities
- Longevity risk – the Scheme's pensioners may live longer than expected, with the result that insufficient assets have been reserved to meet their benefits
- Inflation risk – as the benefits are linked to inflation, higher than expected inflation may result in the benefits being more expensive than expected
- Employer Covenant risk – the risk that the sponsor is unable to provide any additional resources that may be required to fund the benefits
- Regulatory / Political risk – changing legislation may increase the cost of benefits
- Risk of expenses being higher than expected
- Risk of fraud
- Selection risk – Members exercise options to their own advantage
- Liquidity risk – sufficient liquid funds will not be available to pay benefits as they fall due
- Currency risk as over 60% of the Scheme's assets are invested in global equities

4 [*based on April 2016 SA4 Q3*]

(i)

- Deferreds and pensioners – no immediate impact on benefits
- Active members will become entitled to a deferred pension
- In respect of past service
- Based on pensionable service to the closure date
- And pensionable salary at the closure date
- The final salary link will be lost
- Unless Scheme is closed in such a way that this is maintained or underpinned
- The deferred pension may revalue in line with a revaluation index (eg price inflation, possibly subject to a cap) up to retirement age
- The deferred pension may be more or less valuable than the accrued final salary pension
- Depending on how future salary increases compare with the revaluation index
- The impact on active members will vary according to their age
- Younger members will lose out more on future benefits
- …but they also have a longer term in which to make up any shortfall

- Members with short service (less than 2 years) may be entitled to a refund of contributions…
- …or a transfer value instead of a deferred pension
- The employer will need to put in place a pension scheme for future service
- Which may need to satisfy government minimum requirements
- This is likely to be a defined contribution scheme (or a shared risk scheme with low benefit guarantees)
- The member contributions will change to those required under the new scheme
- How the future benefits compare will depend largely on the level of employer contributions
- Which may well be lower than the cost of the final salary scheme
- The member would be exposed to more financial risks
- E.g. investment risk
- And longevity risk
- The death in service and ill health benefits are likely to be different
- All members – second order impact on security of benefits
- … and discretionary benefits
- Any future covenant improvement may result in increased job security for the active members

(ii)

- Review the sponsor's business case for putting forward the changes and ensure it is robust
- .. and to understand the reasons for the proposal
- The trustees must act within trust law, the governing documentation of the scheme and legislation
- The trustees are required to act in the best interest of the Scheme members
- The trustees should take advice
- The security of accrued benefits is normally considered a priority over the level of future benefits
- The proposal is likely to result in lower costs and/or less risk for the sponsor
- Hence less valuable benefits for active members
- Level of benefits for deferreds and pensioners are unlikely to be directly affected
- However, the security of benefits for all members should be improved
- Weighing up the lower level of benefit against improved security will not be easy
- Especially as different categories of member are affected differently
- Can the sponsor achieve the same outcome in a different way if the trustees do not agree?
- E.g. by terminating employment contracts and re-hiring
- What replacement benefits are offered to the active members?
- What impact will the proposed change have on the sponsor covenant?
- Can the sponsor afford to fund to full solvency level if the trustees trigger a wind-up?

- What impact will the severing of the salary link have on the funding level of the Scheme?
- Nevertheless, the trustees will wish to consider the replacement pension scheme for active members…
- …and suggest enhancements if it is considered poor
- So the proposal will be easier to agree to if the sponsor covenant is weak
- Should the trustees use the leverage they have to encourage the sponsor to abandon or improve the proposal?
- Or to improve security by making a cash injection into the scheme.
- Do any of the trustees have a conflict of interest
- As a member or director/shareholder
- The trustees may consider that future service pensions are a matter for the sponsor and employees to agree between themselves
- And insist on fair play during the consultation process
- e.g. by reviewing communications
- … however the trustee could consider exercising their power to influence the future benefits of members generally

(iii)

- The trustees may consider a wind-up to be in the best interest of scheme members and follow this course
- The sponsor is unlikely to want to trigger a wind-up
- If there is a requirement to immediately bring the funding position to full solvency
- The trustees could use this as leverage to negotiate for an improved rate of funding following an updated valuation report
- As a condition for agreeing to run the Scheme as a closed fund
- I.e. place a higher value on the liabilities of the scheme as measured for funding purposes
- And a higher contribution rate to eliminate any deficit
- Or a lump sum cash injection
- In connection with this, the trustees could move to a more cautious investment strategy
- E.g. a greater proportion of bonds
- Or a liability driven investment strategy
- To match liabilities more closely
- Possibly with selective use of annuities
- One plan might be to fund on a self-sufficiency basis
- And aim to achieve a fully funded position over a number of years
- Need to consider policy for any future discretionary benefits
- Review actuarial factors and transfer basis
- The trustees could ask for contingent security instead of cash
- The trustees could take steps to make an ultimate windup easier, e.g. a data validation exercise
- Review the sponsor covenant and commitment to the scheme
- Possible communication with regulator
- … and with members generally

5 [*based on September 2016 SA4 Q3*]

(i)

- The assumptions used to assess the value of the liabilities on the funding basis will have to relate to those documented in any formal documentation
- So will need to be prudent, consistent with those used in any funding documentation
- Unlike those used for assessing cashflows which should be realistic
- To understand the risks of the timings of investment cashflows not meeting benefit cashflows e.g. reinvestment risk, liquidity risk.
- And should not include any margins for prudence
- Cashflows usually undiscounted so discount rate not needed
- The assumptions used for the funding basis will be long term in nature
- some options may be ignored if either cost neutral or beneficial to scheme's finances
- E.g. commutation at retirement, Early retirement, Transfers out
- Cashflow assumptions could be much more short term
- and allow, for example, for short term inflation expectations
- Or company plans for restructuring workforce
- Cashflows could be net of price inflation, leaving investment adviser to adjust for this

(ii) Scheme design

- Need to consider the design of the guarantee within the general scheme design
- What is the likely cost of the guarantee?
- And how will it be measured?
- Is guarantee applicable a year at a time or over the whole period of membership
- Will it apply to each individual fund available to invest in
- Or to each member's fund as a whole
- Does guarantee apply to all contributions
- will guarantee apply after retirement
- i.e. once members are drawing pension
- are there any other guarantees that are cheaper
- or more appreciated
- what are other schemes doing
- Also legislative requirements/costs
- Such as valuations
- And levies if applicable

Risks involved

- The cost of guarantee is greater than expected …
- … which is reflect in higher contributions than expected
- Or additional funds required at inopportune times (liquidity / marketability risk)
- Particularly as there is a concentration of risk i.e. that the guarantee bites for lots of members in a given period as a result of a market crash
- Will members appreciate it

- i.e. is it value for money or could the extra money be used to increase contributions
- or provide other guarantees
- will members select against it
- by choosing risky investment strategies
- The trustees may wish to limit the investment options available to mitigate this risk …
- … and/or offer a default fund
- The guarantee is likely to be more expensive the more frequently it applies i.e. yearly, to each fund and on each event.

(iii) The main sources of cashflow are:

- Ongoing Contributions from employer and members into members' funds
- Employer contributions into underpin reserve
- Payments out of reserve to members if funded
- Refunds to employer from reserve if funded
- Switches between different funds
- Transfers in/out
- Pension payments to members on retirement if payment from fund
- Refunds to members on death
- Lump sums on retirement
- Professional and Administration fees
- Investment expenses
- Insurance premiums
- Regulatory levies
- Payments to insurance company to purchase annuities (if bought out)
- Investment income and returns on funds
- Buying and selling investment assets

(iv)

- Deciding on a model to use
- And the assumptions to use within that model
- Especially as new scheme so no previous experience

- What is the model going to be used for?
- Is it for reserving, accounting, cashflow modelling or some other use.
- Depending on reason assumptions or objectives could be different

- How will the objectives be set?
- e.g. 90% chance of reserve being sufficient to pay underpins over next 5 years
- How many simulations to run
- Will model just need to provide value of reserve to be held
- Or show probabilities of extra funds being required over set periods

- Will need expected returns and standard deviations for all asset classes
- This could be a lot depending on choice in scheme
- Along with correlation between classes

- Will also need to have assumption regarding members' choices of funds
- Are members more likely to go for risky assets if there is 0% underpin
- Will this attitude change in times of economic upheaval
- So will members move based on current, past or perceived future economic scenarios
- Will this affect lifestyling design

- Time; the need to develop and test a suitable model
- Cost; the exercise could be costly given the complexity
- Communication; the danger of miscommunication between the company and the actuary with regard to what is required …
- … and in interpreting the results
- Ensuring those involved have sufficient experience and expertise …
- … in particular regarding how to model more unlikely events.
- Consider any professional guidance / compliance requirements

(v)

- Results are only as good as the model and the assumptions
- And even correct results might not be helpful
- E.g. if results are unstable
- Some factors will be very difficult to predict
- Such as member's investment choices
- And movements in and out of scheme
- Market volatility will be an issue
- Especially how it affects behaviours
- Model should improve over time as more information becomes available

(vi)

- Restricting investment choices
- Perhaps with-profits
- Or defensive assets
- Change definition of guarantee – if it is over longer term then less likely to bite
- If 0% is after expenses change to before expenses
- Insurance
- Get some sort of parent company guarantee to pay cost of underpin
- Reduce contributions
- Restrict eligibility
- Guarantee applies only for active members

(vii)

- Guaranteed annuity rate
- The member can use their pot at retirement to buy a pension at a pre-determined rate

- Collective DC scheme
- Fixed contributions, risk shared by scheme members, amount paid out depends on funding

- Deferred annuity
- Contributions each year can be used to buy a deferred annuity from scheme

- Retirement income guarantee
- Fund set up to pay pensions beyond certain age – removes longevity risk

- Investment guarantees through insurance
- Member has no downside risk, but loses some upside risk

- With-profit funds …
- … where the risk is shared between the member and the provider of the fund (usually the investment business or insurance company).

- Employer-funded “smoothing fund” …
- … where the employer pays a percentage of core contributions into a central fund which is used to manage a targeted income at retirement

- DB underpin …
- … where the employer meets the cost when the underpin bites.

END OF SOLUTIONS