Actuarial Society of South Africa

EXAMINATION

20 October 2022

Subject F204 - Pensions and Other Benefits Specialist Applications

EXAMINER'S REPORT

Overall this exam gave sufficient opportunity for candidates to demonstrate mastery of the subject matter, and there were many marks available, allowing for well-prepared candidates to score well.

QUESTION 1

The question required candidates to assist a Board of Trustees to address the rising cost of death and disability benefits. This question was reasonably well answered.

i) Outline the purpose of death in service benefits offered by employers and the structures available to deliver the benefits as well as the design considerations. [14]

- As well as providing financial protection in retirement for employees, an employer may choose to extend that protection to those who are financially dependent on, or who live with, that employee.
  - Paternalistic view of the employer
  - A benefit may therefore be payable on the death of an employee.
  - May be at lower rates than employees could access in the individual market
  - Free cover limit up to which there is no underwriting
- Death in service benefits can be paid from the retirement fund (approved)
- or from a separate group life insurance policy arranged by the employers (unapproved).
- The different types of provision have different tax implications.
- Approved and unapproved is the common way of referring to the different tax treatments:
- Approved:
  - The premiums are included in the contributions and the tax treatment follows that of the premiums, usually pre-tax.
  - Benefits are taxable, in particular lump sum death benefits are taxed the same as lump sum retirement benefits.
- Unapproved:
  - The premiums are post-tax and
  - benefits are paid tax-free.

- A lump sum is usually paid on the death of a member.
  - Commonly the lump sum benefit is two or three times the salary

  - The benefit may be a much higher multiple where there is no spouse's pension.
  - The same level of benefit is generally applied to all members,
  - a higher benefit could be argued for married members or those with dependent children

- A spouse's pension and children's pensions can also be paid,
- The pension can be calculated as a percentage of one of the following three amounts:

- the deceased member's prospective pension (i.e. based on pensionable service continuing until NRA)
- the deceased member's salary
- the deceased member's accrued pension (i.e. based on actual pensionable service).

- The first two approaches provide a benefit that is largely independent of the age at death, whereas the third approach provides a benefit that is low on death at young ages, which may be when the need for financial protection is greatest.
- However, the third approach results in a lower cost benefit, given a similar target at older ages.

- Insurance of the death benefit is common,
    - particularly in small or new funds.
    - Insurance for spouse and children's pensions is usually used in DC and perhaps small DB funds.
- In large DB and DC funds, insurance for these benefits may be approximate or may not be used at all (referred to as "self-insured" by the fund).

- When appraising fund design, the effect of lump sum and death in service pension benefits need to be considered together.
- In DC funds, DB death in service benefits are often provided, usually in addition to a return of the accumulated fund.
- The DB part provides protection and predictable benefits to dependants, but is usually an insured benefit.

- Death in service benefits and death in retirement benefits should usually be consistent, to the extent that the benefit payable to dependants on death just after retirement is not significantly different from the benefit payable on death just before retirement.

- Some funds also offer members the option to choose the level of death in service benefits that suit their needs.
    - With such funds, care is needed to ensure that a member choosing to increase death benefits is not selecting against the fund.
    - The opportunities to change the level of provision may therefore be linked to significant lifestyle events, such as marriage or childbirth.

- It is important to note that the distribution of a lump sum death benefit is subject to the discretion of the trustees of the retirement fund ito Section 37C (fund benefits) or the employer - usually based on the employee's beneficiary nomination form (employer provided benefits).

- Many employers also provide funeral benefits.
    - These benefits are of relatively small amounts and are paid quickly after the death of the employee to cover the cash-flow requirements of the family.
    - Benefits usually cover spouses and children (up to a max age) – attractive to employees
    - Funeral benefits are provided by the employer (as opposed to the retirement fund) and insured through a policy with an insurer.

ii) Discuss this suggestion and comment on the influence this would have on the design of the death in service benefit. [8]

- Setting an overall cap on the allocation of contributions to risk benefits and expenses is not unusual
- This would typically then be included within the rules of the Fund

- It would need to make provision for the scenario where the cost of benefits is expected to exceed this level
  - Would benefits be reduced to fit the cost allocation
  - There would need to be clear communication to members to ensure that the benefits themselves are not promised or defined and may be variable

- There are many ways that this could be managed across the Fund as a whole:
- You could consider a fixed multiple of salary across all members and all ages where the average cost of benefits is managed within the cap;
  - This would imply a cross-subsidisation across age and gender groups
  - A fix multiple across the whole fund may result in a benefit that does not meet the needs for some members while exceeds the needs of others
- You could determine an age-based scale of benefits where the benefit for each age group is determined by the amount of benefit that can be purchased with the allocation
  - based on the expectation that older members have higher probability of death
  - this is likely to result in a higher multiple for younger members and a lower multiple for older members
  - This may be considered appropriate relative to the needs of members
  - Although the actual multiple at each age would need to be considered as to the ability to meet members needs

- The benefit is likely to need to be reviewed annually or at any other time when the insurer determines a change in rates
  - If self-insured the valuator would need to review at least annually
  - Communication would need to sensitise members to this regular review so that they can assess their own personal needs

- Fund could also consider a voluntary flexible level of cover in addition to the basic cover provided by the Fund and allow members based on certain criteria to select a higher level of cover
  - This could be aligned to change in their financial needs; or
  - At the time of the annual review and adjustment to the Fund benefits

iii) Outline your response to this suggestion. **[7]**

- There is clearly a dual objective where members of the fund are also employees of the sponsoring employer
    - If the employer funds the increasing costs, this represents an increase in remuneration for employees – outside of a strict total cost to company arrangement
- The employer would typically see the fund as a part of the overall benefit offering to employees
- Would aim to ensure that the benefits are reasonable and offer reasonable protection to its employees and their beneficiaries
    - This would be an important aspect of its recruitment offering
    - Would aim to match competitors
    - Take advantage of available tax concessions
    - The employer would therefore have an interest as a stakeholder in the level of benefits offered
- The employer may have its own view or objective on the balance between risk benefits and retirement savings
- The fund would however be governed by its rules
    - How would the rules deal with a potential shortfall in contributions allocated to the risk benefits
    - Would the Board have to manage this on its own or would there be potential to engage the employer
- Would the employer be in a position to assist the fund financially and pick up additional costs?
- Would this result in an increased contribution by the employer or
- Would the fund move to an unapproved scheme where the employer takes full responsibility?
- If the employer picked up the additional cost how would this affect members /employees?
    - If on a typical cost to company salary package basis the members may in any event meet the cost which would reduce their net take home pay
    - Could the employer build the additional contribution into the next salary negotiation where part of the increase is to contributions and is offset against the overall salary increases
- If the Fund was an industry fund would there be a bargaining or employer forum that could be used to agree the change across all employers
    - Negotiating change in industry funds are difficult due to the multiple parties involved
    - Communicating this change across multiple employers/employees would be an additional challenge

iv) Describe the issue of cross-subsidisation in defined contribution funds and explain to the trustee why this suggestion may or may not be appropriate. [5]

- Setting a fixed rand amount per member per month would not be typical in SA retirement funds
- Where benefits are based on a multiple of salary higher salaries employees would receive higher benefits and would be expected to pay a higher contribution
- There are already a number of cross-subsidies within a dc fund
    - Members often have the same multiple of salary
    - Higher salaries are typical for older employees
    - Older employees have higher probability of mortality
    - Risk rates are the same for all members

Where benefits are age based there may be slightly less cross-subsidy

- If you were to determine the expected cost of benefits on a multiple of salary basis and divided the total expected cost by the number of members you are likely to have significant prejudice to the younger and lower paid employees
    - This may further reduce the allocation to retirement benefit than the current escalating costs
- A fixed rand contribution is more likely to work where the benefit itself is fixed in Rand value
- Fixing the death benefit to a fixed rand value is likely to create further difficulties in terms of the design and meeting members needs:
    - The younger lower paid employees may require a higher rand value when compared to their salaries
    - but level may be too low for higher paid employees, married members or those with dependants
- The solution might work if members can select a multiple of this fixed rand value
    - But this still leaves a level of cross-subsidy across ages where the cost of every Rand of death benefit would be cheaper for younger members than older members

QUESTION 2

This question asked candidates to advise the trustees on a possible change to the investments underlying a retirement fund's living annuity portfolio. This question was quite challenging in parts, and was the most poorly answered of the 3 questions in the exam.

i.) Describe the structure of a living annuity within a retirement fund and the benefits provided. [6]

- A living annuity is an investment account from which regular annuity payments are made to the retiree (or possibly their surviving spouse)

- The living annuity is credited with investment returns and debited with annuity payments and, possibly, expenses.

- The annuity payment is expressed as a percentage of the living annuity account value (drawdown percentage).

- The statutory drawdown limits are 2.5% and 17.5% but many retirement funds impose a lower maximum drawdown (sometimes age based), especially where the living annuity is the default annuity.

- The level of the annuity is set on retirement and can be revised once a year on the retirement anniversary.

- The liability of the fund in respect of a living annuitant is limited to the value of the living annuity account.
- If an annuitant's account is depleted before death, the member would not receive an additional benefits from the fund.

- On death, the living annuity may continue to the spouse or may be payable as a lump sum to dependants / nominees.

- Lump sum death benefits are subject to S37C

- Regulation 28 applies to any investments that are made available to living annuitants.
- Annuitants typically have investment choice
- And receive ongoing advice regarding these

ii.) Discuss the points you would make to the trustees. [7]

- Most commercial living annuity providers do offer investment choice and a lower risk option would typically be available

However, with these providers:

- Annuitants are assumed to have a financial advisor
- The responsibility to look after annuitants does not apply as in the case of a pension fund
- If the Trustees were to introduce investment choice, a significant amount to training and communication will be required to make sure annuitants are properly informed
- It would not be advisable to establish a new portfolio that only suits a few retirees
- The trustees would also then need to establish rules around switching between portfolios
- Which could happen at inopportune times
- The Trustees would need specialist advice on the establishment and management of the additional portfolio
- Annuitants do have the option of transferring to a living annuity outside the fund that can provide this extra choice.
- However, this is likely to come at a greater overall cost to the annuitant.
- In order for a living annuity, even with a low drawdown percentage, to provide an income that can keep pace with inflation over the longer term, a substantial exposure to growth assets is required.
- The current investment strategy meets this requirement.
- A bond portfolio could consist of fixed-interest bonds or inflation-linked bonds
- Fixed-interest bonds would not be an appropriate match to inflationary liabilities
- A low-risk portfolio invested largely in bonds would most likely only be appropriate for an annuitant with a short time horizon who is looking to transfer to a conventional guaranteed annuity
- For an annuitant with a short time horizon (e.g. low life expectancy), a cash portfolio would probably be more appropriate
- For a new retiree who is considering this portfolio as a long-term portfolio, a guaranteed annuity is probably more appropriate. They probably should not be considering a living annuity in the first place.

iii.) Discuss the advantages and disadvantages of the ideas set out by the trustee. [8]

- The risk being addressed is that of disinvesting monies (paying annuities) after a drop in growth assets. Even if markets recover, there are fewer remaining assets to benefit from the recovery (also called sequencing risk)

The advantages of the proposal are:

- It will address the sequencing risk to an extent.
- 3 years is probably a long enough time horizon to allow the growth assets to perform without any reductions due to annuity payments

The disadvantages of the proposal are:

- It will be difficult to estimate the 3 years' worth of annuity payments as the living annuity account balance and / or the drawdown percentage can vary. It will therefore need to be approximate.
- By keeping the current balanced portfolio, and moving 3 years' worth of annuity payments to a low-risk portfolio, the effective exposure to growth assets will reduce.
- In particular for a member with a drawdown percentage of 15% or higher, around 50% of the living annuity account will be allocated to the low-risk portfolio.
- This will result in the overall expected return being significantly lower than the current expected return under the balanced portfolio. The living annuity is unlikely to provide the expected benefits, especially where a higher drawdown applies.
- The percentage exposure of each living annuitant to the balanced and low risk portfolios will differ with their drawdown rate. Overall investment returns will differ as a result for most living annuitants which will be difficult to explain
- The initial sequencing risk is managed. However, the sequencing risk in the period after 3 years remains. This may not be a major issue if the balanced portfolio has performed in line or above expectations during the 3-year period.
- There may be annuitants who don't withdraw any income (or much income) in the first 3 years as they have a source of income elsewhere.
- The investment in a low-risk portfolio would be inappropriate for these annuitants
- The administration of the living annuities will be more complex and will most likely result in a fee increase.

Credit given for other valid points

iv.) Assess the administrator's proposal and explain the further issues that would need to be considered for the proposal to be implemented and how these might be resolved. [9]

- The proposal will simplify the administration and should result in no or little cost impact
- There will only be 1 investment return that applies to all living annuitants
- Given that R400m is the size of the annuity portfolio, it is likely to be a pooled portfolio in which case it won't be possible for the fund to disinvest solely from the more stable assets.
- If a segregated portfolio, then possible
- To implement the proposal with pooled portfolios will need a growth pooled portfolio and a stable pooled portfolio. The administrator (or actuary) would then need to determine the investment return each month for the combined portfolio.
- Will need to decide on a strategic allocation to the stable portfolio (say 30%) and a minimum level at which a top-up from the growth portfolio is required e.g. if stable portfolio is less than 10% of living annuity account, top up to at least 10%.
- Should look at a trigger at which point monies move from the growth to the stable portfolio in addition to the 10% top up level e.g. if return on growth portfolio exceeds the benchmark for the quarter, allocate 5% of the growth portfolio to the stable portfolio.
- Could increase the percentage to allocate based on outperformance of the benchmark.
- Need to decide what to do with new retiree capital - could split 30% / 70% or allocate in full to stable portfolio if level is low
- Growth portfolio can then be structured more aggressively compared to current balanced portfolio. This should be done to try target the same overall investment return under the revised structure as under the current balanced portfolio.
- The proposal will result in reduction in sequencing risk not only for the first 3 years, but throughout retirement.
- Will need to consider what to do with existing living annuitants when the change is implemented. Might not be an opportune time to move assets. Might therefore move to the new structure in a phased approach over say 6 months.

QUESTION 3

This question focused on the proposed introduction of the so-called 'two-pot' system by National Treasury. This question was well answered.

i.) Outline the proposal that has been made by National Treasury. [5]

- The overall intention is to limit access to retirement savings before retirement age and thereby increase the overall savings at retirement
- The proposal is at its initial stages and would require more work before it reaches a level of implementation
- It proposes that with effect from the effective date, going forward, retirement contributions would be allocated to two pots
- One pot would receive 2/3rds of the contributions and must be preserved until retirement
- The second pot would receive the remaining 1/3rd of contributions and members would be allowed to access this pot in the period leading up to retirement
- The amount in the 2nd pot could be available at any time but accessed once per year
- This would potentially apply to all funds including: pension, provident, preservation, retirement annuity, defined benefit and public sector funds

- However, retirements savings before this effective date would not be allocated to the two pots
  - there would therefore be a third pot of savings
  - Which itself may be split into the pre and post annuitisation legislation
- There is a need to reconsider the tax treatment of the 1/3rd going into the accessible pot

ii.) Explain the challenges within the current environment National Treasury aims to address through the proposal. [5]

- While retirement savings should be used for retirement there is some recognition that there might be a need to allow limited access to retirement savings before retirement
- In additional households in general do not save enough for retirement or short/medium-term needs
- Two main concerns with the current retirement fund design policy:
  - There is still insufficient preservation of retirement benefit before retirement; and
  - Individuals who need access to their savings can access all retirement funds if they leave employment
- The current system requires tax to be paid on withdrawals before retirement
- but these taxes are not sufficient a disincentive to change the behaviour
- Solving the above concerns appears to result in a conflict:

- Trying to encourage preservation while at the same time allowing individuals to access retirements savings without losing employment
- Limited access to a portion of the benefits may reduce the need for accessing the full benefit and result in greater preservation in the long run
- Therefore, encouraging pre-retirement preservation while still supporting needs of members

iii.) Briefly summarise the high-level findings and explain the main factors that influence the net replacement ratio. Outline how changes to each of these factors could improve the retirement outcomes for these members. [14]

High-level findings

- The projections applied a consistent assumed rate of return or investment strategy across all ages group, assumed contributions in terms of the rules and no additional voluntary contributions and that all members have the same normal retirement age
- The chart shows that current members under the age of 30 years as well as new joiners in that age group have a reasonable chance of achieving a net replacement ratio of 80%
- A NRR of 75% would in general be considered a good outcome
- and as such the results for the younger members show the prospect of a good outcome
- a new entrant and younger member who save for their full careers are likely to achieve a reasonable retirement savings outcome which implies that as a combination the overall strategy and design of the Fund is reasonable:
- This includes:
  - the Investment policy statement / strategy is likely to be appropriate
  - the net contribution towards retirement is likely to be reasonable
  - the retirement age (between 60 and 65 based on chart) is reasonable
  - assumed fair and reasonable annuity conversion terms
- The expected outcomes for older members however look poor
- It shows further a deterioration as age increases
  - This says that older members are on average unlikely to meet a reasonable NRR
  - Given that the investment strategy, contribution rate, NRA and annuity conversion are reasonable for the younger members it likely indicates that older members do not have sufficient savings set aside to date
  - When compared to new joiners of the same age group the existing members have only a marginally better NRR prospect which seems to confirm that they have poor past savings balances
  - This could be due to:
    - Low levels of service or high staff turnover in the industry
    - But this is by its name an industry fund and as such you would expect that even as they move around the industry, they remain members of the Fund BUT
    - a potential lack of preservation and past savings within the fund
    - It is likely that past savings outside of the Fund would not have been included in this analysis and may impact the results
    - Assumed that if this is an industry Fund that they maintain the same record when moving between employers which may in practice not be the case
    - The rate of preservation could possibly be confirmed by investigating the choices on withdrawal from the Fund

Factors:

Investment returns:

- Higher investment returns lead to higher accumulation of contributions over a member's contributing lifetime
- Has a positive effect on the member's NRR (or vice versa)

Contribution rates:

- Higher contribution rates result in greater savings amounts being accumulated towards retirement benefits
- Results in higher NRR (and vice versa)

NRA

- Later retirement results in a lower annuity conversion factor and a higher level of income for the same amount of savings, and hence a higher NRR
- Conversion factors at retirement impact annuity levels and this is a permanent effect at annuity purchase

Improve retirement outcomes:

If for these purposes we assume that the results are due to an overall lack of preservation then the following should be considered in trying to ***improve overall outcomes:***

- Higher targeted investment returns would add additional risk to the expected long-term portfolio returns and are less likely to have an impact:
  - Younger members already show reasonable NRR and would be most affected by higher targeted returns
  - Older members have less time to save and hence higher returns have less time over which to influence the outcome
  - As members get older likely that you would want to reduce risk and hence likely reduced returns to preserve the capital they have saved or align to post retirement decisions

- Higher overall contribution rates less likely to have impact:
  - Younger members show net contribution is likely appropriate
  - Older members have less time for the additional contributions to make an impact
  - A significant increase in savings is likely to negatively impact take home pay and younger members would argue it is not needed
  - Additional voluntary contributions up to the maximum rate are likely to provide some benefit to older members albeit limited by the age and time to retirement

- Increasing the NRA:
  - Again younger members could argue this is inappropriate and not required on their part
  - Older members would benefit twofold:
    - due to the extra savings that could be accumulated along with the additional investment time horizon and
    - Due to a lower conversion cost at the time of retiring at a later age
    - Voluntary late retirement might be the most beneficial option available to current members BUT
    - This would be in the hands of the Employers or Industry body which may or may not have capacity to retain ageing staff

iv.) Calculate the expected net replacement ratio for these three members. Set out your calculations and clearly state all assumptions that you make. [10]

- The following must be covered:
  - Assumption for inflation or stating that all other assumptions are in real terms
  - Long term investment returns assumption
  - Salary increases assumption
  - Annuity capitalisation factor [1 mark for values between 12 and 16, 0.5 for others]
  - Reasonable assumption around contribution rates [10% to 20%]
  - Assumption around assumed payments per annum
  - Assume no decrements to NRA
  - Assume all benefits are taken as they are available

- *Any additional reasonable assumptions given credit*

- *Assumptions adopted for model solution:*
  - *Assumption for inflation or stating that all other assumptions are in real terms*
  - *Long term investment return = 4.5% above inflation*
  - *Salary increases assumption = 1% above inflation*
  - *Annuity capitalisation factor = 14*
  - *Reasonable assumption around contribution rates = 15%*
  - *Assumption around assumed payments per annum = monthly*
  - *Assume no decrements to NRA*
  - *Assume that the members take all benefits available when they are available*

- Method:
  - Future value (or accumulated present value) of annuity certain at the net rate (Investment returns less salary inflation) for 35 years to age 65
  - New entrant has 35 years at full contribution
  - For new entrant under NT proposal, you can assume 2/3rds of the accumulated value of the new entrant that preserves 100%, i.e. assume the 1/3rd is always taken and spent
  - 45 year old have 20 years at full contribution, assume no prior savings
  - Divide accumulated value by annuity factor to arrive at pension
  - Project salary to NRA
  - Determine NRR

- Results:

Age	*Term*	*Contribution*	*Accumulated value*	*Annuity*	*Pension*	*Accumulated salary*	*NRR*
30	*35*	*15%*	*14.29319625*	*14*	*1.020943*	*1.402577*	*73%*
30	*35*	*10%*	*9.528797502*	*14*	*0.680628*	*1.402577*	*49%*
45	*20*	*15%*	*5.239010096*	*14*	*0.374215*	*1.208109*	*31%*

v.) Discuss your results from iv) in light of the trustee's argument. [2]

- The new entrant has a reasonable expected NRR in line with the results from the chart in prior question – i.e. linking the reasonability of results
- The proposed model does not meet an ideal targeted NRR of above 70% but at 49% is reasonable compared to the actual results expected from these members – refer prior chart
- The result shows a better result than the 45 year saving for 20 years
  - 20 years is not quite 2/3rd but even if period was the same there would still be a difference due to compounding of savings over time
- Proposal might achieve its objectives for this fund