

Actuarial Society of South Africa

EXAMINATION

20 May 2015

**Subject F204 - Pensions and Other Benefits
Specialist Applications**

MARKING SCHEDULE

QUESTION 1

- i) **Set out the advantages and disadvantages to a retiree of the Fund pension compared to purchasing an annuity from an insurer.** [5]

{The question was well answered by most candidates}

Advantages

- No commission or upfront fees are payable. All things being equal will result in a larger initial pension.
- Higher expected pension increases as only 0.3% per annum is deducted for investment fees and no other charges apply. Insurer charges will be much higher than this.
- Retirees know the Fund and the Trustees managing it. Might have more trust in the Fund as opposed to an external insurer
- The investment portfolio backing the pensions has a greater growth asset exposure than a typical with-profit annuity offered by an insurer. Would expect better pension increases over the longer term, although more volatile perhaps
- Pensions Account currently showing a surplus position, if not fully priced this will increase security or likelihood of better increases or bonuses.
- Return of balance on capital on death is attractive and not typical

Disadvantages

- Fund only offers with-profit annuities at a single PRI where future increases are unknown.
- Retiree might be better served with a different type of annuity or want a different PRI.
- No flexibility regarding the provision of (and amount of) the spouse's pension. A married retiree whose spouse has their own retirement income might not need a spouse's pension.
- In general less flexibility as far as benefits are concerned (e.g. guarantee period, annuity type etc.)
- Although the Fund is large and the Employer acts as guarantor, a large insurer is likely to offer a greater security as far as benefits are concerned

ii) Describe the risks placed on the Employer as a result of the Fund providing in-fund pensions. Comment further on how you would quantify the risks and mitigate against each risk. [13]

{Most candidates assumed the fund guaranteed pension increases at a level of inflation and did not consider the impact of not granting pension increase when the fund cannot afford to do so.}

- The Pensions Account could go into deficit due to poor investment returns, unaffordable pension increases or lighter than expected pensioner mortality.
- The pension increases are subject to affordability so the Trustees should not be able to grant increases if the Pensions Account is in deficit. The risk of unaffordable pension increases is therefore limited.
- The Employer could further request that pension increases above a certain level (e.g. inflation) must be agreed to by the Employer (the pension increase policy would need to be amended)
- Poor investment performance over a year or two can place the Pensions Account in deficit but this can be managed by not granting pension increase for a number of years (or can be covered from any solvency reserve or surplus in the Pensions Account). This does therefore not present a risk to the Employer other than the reputational risks associated with having unhappy pensioners
- Sustained poor investment performance (in particular if the investments fail to meet the 4.0% per annum PRI return) can impact on the Employer
- In particular, if the assets in the Pensions Account are insufficient to meet the liability in respect of current pensions valued on a basis assuming no future increases (level pensions), the Employer would need to meet this shortfall in the Pensions Account.
- The likelihood of such an investment scenario can be assessed by using asset liability modelling.
- In particular, an ALM would be helpful in determining what level of solvency reserve/surplus in the Pensions Account is needed to minimise the risk to a level acceptable to the Trustees and Employer.
- The ALM can also be used to select an investment strategy that minimises the investment risk to the Employer. This strategy might be different from the investment strategy that provides the best outcome as far as future pension increases are concerned.

- Could minimise investment risk by cashflow matching the current level pension
- The mortality experience must be monitored regularly (each actuarial valuation)
- The fact that members can elect to secure a pension outside of the Fund could mean that less healthy members select against the Fund (e.g. by taking a living annuity) makes monitoring of mortality very important
- Make allowance for future improvement both in the valuation basis
- and the initial pricing basis for new retirees (if different)
- Effect of mortality changes is often gradual and can be balanced out with future pension increases
- Can obtain insurance against mortality risk
- Can remove all the above risks by buying annuities from an insurer
- Like to be very costly
- and if bought in the name of the Fund will still leave the Employer with insurer default risk

iii) Discuss how you would set the assumptions and determine the liability in respect of the pensions in payment for the Fund's statutory actuarial valuation. [18]

{Reasonably well answered by the better candidates. All candidates struggled with how to deal with the fixed 4% PRI and the targeted pension increase.}

- The main valuation assumptions are the discount rate, pension increase rate, mortality and family statistics.
- Consider how the previous valuation assumptions were set. Ideally looking for some consistency.
- In terms of the FSB requirements and SAP201, valuation assumptions should be best estimate assumptions.
- Should consider solvency reserve (conservative financial assumptions) and risk reserve (conservative demographic assumptions)

Discount rate and pension increases

- Determine a price inflation assumption as at the valuation date. This can be done by considering the difference between nominal and inflation linked Government bonds at a duration consistent with the duration of the Fund's liabilities. Should allow for an inflation risk premium (give credit for alternative views).
- Discount rate can be set either based on nominal bond yields or as an expected real return above inflation (based on a recent ALM for instance) {various views exists here}
- The pension increase rate should be set equal to the discount rate less 4.0% per annum.
- The pension increase policy states that pension increases are targeted at between 80% and 100% of inflation. If the pension increase assumption is determined above is not consistent with this then:
 - Either the pension increase policy must be amended to change the 80% to 100% target and this must be communicated to pensioners; or
 - The 4.0% p.a. PRI needs to be reconsidered by the Trustees. This would impact on the liabilities and the initial level of new pensions
- Solvency Reserve basis: Determine discount rate and inflation of Government Bond yields. Allow for cost of switching to bonds.
- Fix pension increase as a percentage of inflation between 80% and 100% (probably 100%)

Mortality

- 7 000 pensioners is likely to allow a mortality investigation that will be statistically relevant.
- Won't be sufficient for a Fund specific mortality table but should be credible enough to adjust an existing mortality table.
- Consider the mortality experience over the 3 year period (and possibly prior periods).
- Detail of investigation will depend on data available. Ideally investigation should be split by gender and should be weighted by the pension amounts as opposed to purely number of deaths.
- Fund is unlikely to know if a spouse at retirement has subsequently died so investigation may understate mortality experience slightly
- Could also consider the experience of other similar funds.

- Compare to current valuation assumptions and adjust assumptions if experience warrants this.
- Make suitable allowance for future mortality improvements.
- For risk reserve would use a lighter mortality assumption with possibly larger allowance for future improvements as well.

Family statistics

- Marital status and spouse's details at date of retirement are known as these are needed to determine initial pension.
- Has this data been captured accurately in the past? If yes then use the actual data for valuation purposes.
- This might overstate liability as spouse might have died since date of retirement (unlikely Fund would know) {give mark if point not made above}
- Could allow for spouse mortality/likelihood of a qualifying spouse by estimating the likely survival probability of a spouse at retirement and applying to the reversion percentage.
- If Fund does not have accurate data regarding marital status and spouse's date of birth for all retirees then use assumptions. Could consider last few year's retirements to derive assumptions (typically the actuary would be involved in determining the pension of new retirees and would have this data)

Other

- The Employer currently covers all the Fund's expenses. It might be prudent to however reserve for the expected future administration expenses related to pensioners, especially on the solvency reserve basis.
- The return of fund credit guarantee might need to be valued on an approximate basis if the Fund does not have an updated record of total payments made up to the valuation date. This can be approximated by using a guarantee period (somewhere between 5 and 10 years usually).

- iv) **Comment on the likely impact on the Fund, existing pensioners and future pensioners if the Trustees accept Insurer Y's proposal. State any assumptions that you make.** [11]

{The better candidates made a reasonable attempt at this. Most candidates did not consider the facts presented in the question in enough detail and made broad comments regarding purchasing annuities.}

- The upfront charges of commission and administration fees will increase the annuity contracts relative to the Fund liabilities for pensioners.
- Allowing for VAT, the upfront fees amount to: $(1.5\% + 2.0\%)*1.14 = 3.99\%$, say 4.0%
- Assuming that:
 - The same mortality assumptions are used by the insurer and the Fund; and
 - The same demographic and other assumptions are used by both.
- The annuity quote would be $1/(1-4\%) = 4.16\%$ higher than the Fund liability
- The Fund incurs an investment fee of 0.3% per annum and no shareholder charge. The annuity portfolio incurs annual charges of 0.8% plus 1.2% = 2.0% per annum. All other things being equal, expected net returns under the annuity contract are 1.7% per annum lower than those of the Fund
- The investment policy of the Insurer Y annuity pool is also more conservative which will also impact on future returns
- Assume growth assets outperform secure assets by 4% per annum (give credit for any reasonable figure)
- Then expected gross return with Insurer Y's annuity pool are $20\% \times 4\% = 0.8\%$ lower than those of the Fund over the longer term.
- Overall, net investment returns, and hence long term pension increases are expected to be 2.5% per annum lower under the with-profit annuity offered by Insurer Y

Impact on Fund

- There would be a large disinvestment required in respect of existing pensioners to purchase annuities. The Fund would need to consider how to manage this process and how this might impact on its future investment strategy (likely to improve net cashflow initially)

- Scrip transfer to Insurer Y will reduce costs and pricing / selling risk of investments
- 12% surplus in the Pensions Account can cover the cost of the 4.16% of loadings under Insurer Y.
- There might also be some Solvency Reserve or Risk Reserves iro pensioners that can be released.
- The Trustees would need to consider applying excess assets to enhance existing pensions on transfer to Insurer Y. Fund unlikely to create surplus from moving to Insurer Y
- Fund would then presumably change its rules to allow no future in Fund pensions

Existing pensioners

- Pension will remain unchanged
- But lower expected future increases as:
 - Surplus in Pensions Account might be used to meet commission and expense loadings as opposed to future pension increases.
 - Increases under Insurer Y expected to be 2.5% per annum lower.
- Existing pensioners would ideally need to be compensated somehow by the Fund or Employer for the lower increases. In particular as existing pensioners elected to not take external annuity policies at retirement.

Future pensioners

- In addition to lower pension increases, will also get a lower initial pension at retirement due to commission and expenses loadings.
- Less need to compensate for lower pension benefits although might consider those close to retirement who may have counted on the Fund pension.
- For all pensioners there will be a disconnect with the Company / Trustees who they know and probably trust

- v) **Suggest how the with-profit annuity offered by Insurer Y could be amended to better meet the needs of the Fund.** [3]

{Poorly answered.}

- Ideally want future pension increases expectation in line with that of the Fund. Would require a reduction in the PRI from 4% to 1.5% per annum.
- A lower PRI with-profit annuity from Insurer Y might mean a more aggressive asset allocation so the PRI reduction required might not be as much as 2.5% per annum
- Would increase liability / pricing by about 20% (8% for each 1% change in PRI rule of thumb)
- Combined with the 4.16% upfront fee this cannot be funded out of the Pensions Account. Other reserves or employer would need to meet this
- Could request that all annuities purchased by or in respect of members of the Fund be commission free. Also try negotiate the administration fee.
- Asset management fee and shareholder charge are less likely to be negotiable as the Fund's pensioners will be part of Insurer Y's annuity pool

- vi) **Set out your comments on the proposal including any further information that you would require.** [12]

{Poorly answered. Most candidates did not make enough unique points. Often the same point was restated in a different format}

- A large with-profit annuity fund could certainly have the economies of scale to bring down the cost of retirement provision. Lower / no commissions, lower administration fees and lower investment and "shareholder" charges should result.

Qualification

- Will the national fund only be open to new individual retirements or will it be possible to transfer existing pensioners to it?

Guarantor

- Who would guarantee the financial soundness of the national with-profit annuity fund?
- Presumably it would be Government. How much, if anything would they charge retirees for this guarantee?

- What is the nature of the guarantee, level pension guaranteed or some minimum investment return (Government bond yields say)?

Investments

- What is the intended asset allocation of the national fund?
- Will the asset allocation differ depending on the PRI (see below)?
- Who will manage the assets? Government or private sector investment managers?
- Will the national fund hold the assets in its own name?

Pricing and options

- From what age can pensions be purchased?
- If no or very small upfront fee and annual fee less than 0.3% per annum, then national fund would offer value compared to the Fund (all other things being equal)
- Future DC pensioners would really only be concerned about the above. All other pricing options really only impact on how their capital is apportioned between pensions, contingent pensions and future increases. For existing pensioners the issues raised below are of greater importance.
- What PRIs will the national fund offer?
- If the Fund's existing pensioners are to be moved as similar pension increases should ideally be secured. Higher PRI would require a top-up to the initial pensioner. Significantly lower PRI would be unaffordable
- Mortality assumptions. If the mortality assumptions used for pricing by the national fund are heavier than the Fund assumptions, it will make the national fund more attractive
- Will the national fund allow spouse's pensions? At 75% reversion? If not, will be difficult to transfer existing pensioners
- What guarantee periods will the national fund offer? Would probably need a guarantee period between 5 and 10 years to meet the return of Fund Credit benefit in the Fund.
- Might create a "base" benefit that Company Z's fund might be expected to meet by its members.

Governance

- How will the national fund be governed?
- Will there be a board of trustees and how are they appointed or elected? If appointed, by whom?
- Ideally the national fund should fall under the Pension Fund's Act.
- Would want to study the pension increase rule or policy

Administration

- Who will administer the monthly pension payments?
- When is the annual pension increase granted? Might need some adjustment to existing Fund pensions if date is not 1 July

QUESTION 2

- i) **Describe the possible forms the benefits may take if either a defined benefit or a defined contribution approach is used.** [12]

{Well answered by most candidates but some surprisingly poor answers as well.}

Retirement DB

- Level of benefit guaranteed
- DB, benefit likely to accrue with service
- E.g. service x 1/60 x FPS
- Where FPS is based on salary over a certain number of months prior to retirement
- Recognised earlier service prior to DJF?

Retirement DC

- Level of contributions known at outset
- Benefit is the pension and cash that is bought with the accumulated contributions and investment returns
- Pension or provident – tax differs:
 - EE prov contributions after tax
 - Full benefit can be taken as a lump sum under provident DC
- Proposed changes to tax regime will remove the distinction between pension and provident funds

Both

- Normal retirement age is usually between 60 and 65 years. Early retirement allowed from age 55 onwards (might be earlier in certain cases). Late retirement typically possible to age 70 years. Depends on fund rules.
- Can now also allow for deferment of taking benefits after retirement.
- Rules will also specify which employees qualify for the fund and for which category of membership
- Both options will allow a cash portion at retirement (100% if provident fund). Typically commute part of pension or may fund for gratuity under DB. DC, portion of account is paid as lump sum (currently max of 1/3rd of benefit may be taken in cash)

- Both funds will offer some form of death benefit.
 - Lump sum most common in DC. Can be age related
 - In DB may be a combination of lump sum plus spouse's and child's pension (latter usually based on salary or prospective pension).
- DB pensions typically provided through the fund but may also be through insurer. Typically will include a spouse's pension and allow for increases at some proportion of inflation.
- Disability benefits typically provided through an employer owned disability income policy. For purposes of rules, disabled member remains an active member. Member may take early ill-health retirement if insurer declines disability claim and trustees deem member to be disabled.
- Change in taxation wef 1 March 2015 means insurers offer lower disability income benefits now
- DB might provide disability benefits in the form of a prospective pension
- Withdrawal:
 - DC = full account
 - DB = DB benefit but subject to PMB
- Both structures can also be used to secure housing loans for members

ii) Set out the advantages and disadvantages of the two approaches outlined in part i)

[6]

{Well answered but most candidates did not take into account the circumstances set out in the question and answered too generically.}

DB

- - Cost to company are less controllable (investments, demographic and expense experience, In particular, phasing in employee contributions may be problematic
- + But benefit at retirement is known for EEs.

- + More familiar to company and employees given existing fund. Easy to make comparisons (+ or -)
- - Costs tend to be higher for DB (admin, advisors etc.)
- + More flexibility in managing early retirement and other discretionary benefits
- - Added volatility to Company Z's balance sheet (IAS19)

DC

- + contribution by company is more transparent.
- + historically favoured by workers and unions (probably for the wrong reasons)
- + / - members bare more risks (investment and post ret mortality) but also the potential rewards
- - members unlikely to have as good a feel for the final retirement benefit as under DB
- + usually more choices in DC (investment, risk benefits). EEs like the idea of choice

iii) Outline what needs be considered in formulating the design of the benefits [11]

{Poorly answered by most candidates.}

Cost

- Company's financial position needs to be taken into account
- Defined benefit, company meets balance of cost. Likely to be flat % so, net of EE, company will pay more initially under DB
- Might be easier to cope with stepped EE contribution in the DC fund
- Ultimately, DB may be cheaper if pay and benefits increase only with inflation
- Regardless of fund, lower management costs = greater benefits / lower cost
- Matching defined benefit fund may prove too costly given low EE contributions proposed under new fund

- But if new fund is DB, easy to compare. Either existing 30 employee or the other 970 may be unhappy
- DC for new may make comparison more difficult and result in less conflict
- Two funds are more costly to run.
- Add new DC category in existing DB fund?

HR

- Good benefits attract and retain staff
- What do competitors offer?

Paternalism / Company risk

- Range from DB (paternalistic / most risks assumed by company)
- To individual funding (i.e. Company provides greater pay and EEs sort out their own retirement provision)
- Compulsory DC fund fall in between
- Degree of paternalism in DC can also vary by changing company contributions (fixed for all, or match EE cont), risk benefits, or in fund pension purchase

Employee needs

- What form of retirement and death and disability benefit do employees need / want. Timing of benefit and benefit type will matter

Legislation

- Company experience with senior employee DB fund and surplus legislation is most likely not positive. Reluctant to create new DB fund.
- Tax changes for 2016/2017 will impact on tax deductibility of contributions

iv) Briefly describe the considerations for the investment strategy which will need to be taken into account for the new retirement arrangement [6]

{Most candidates got side-tracked with detailed investment related issues and failed to cover the broad areas. Poorly answered.}

- Investment strategy policy would be required for the new fund or alternatively the existing fund's policy would need to be revised to allow for the new membership

- Must comply with Regulation 28 (at member level if DC)
- Large membership, larger amount of assets could be available for investment
- New membership: expect to be cashflow positive for a number of years (whether new fund or added to existing fund). No liquidity constraints
- If new fund is DB, then probably can have greater investment freedom (higher risk, higher return) than if DC where older members would require a more conservative approach
- May need to provide some investment choice or a lifestyle type approach if DC where assets move to cash and investments matching the typical annuity investments as members approach retirement
- Annuity @ 2.5% to 4% will therefore be expected to provide inflation related increases
- If new fund, will probably require a pooled portfolio initially until fund is large enough to consider a segregated portfolio

v) **Outline any potential impact that there may be for the defined benefit fund arising from the introduction of the retirement benefit provision to other employees. [3]**

{Poorly answered. Few points were made by candidates, possibly due to time constraints.}

- Company requirement to fund new benefits might mean less scope to improve / maintain benefits in the defined benefit retirement fund.
- DC fund, or category in senior employee fund, may lead to pressure to convert to DC if DC performs well
- Particularly as DC likely to be larger with lower costs and more options
- If new benefits are DB then possibly more investment freedom in the current DB fund if all benefits provided through same fund as new members likely to be cashflow positive
- Economies of scale may reduce admin and other costs throughout
- Possible cheaper risk benefits overall if new employees have a younger age profile