

EXAMINATION

13 May 2010 (am)

Subject F204 — Pension and Other Benefits

Specialist Applications

EXAMINERS REPORT

PLEASE TURN OVER

QUESTION 1

This question required candidates to apply their minds to the impact of an economic recession on the retirement fund industry.

Answers varied in quality. Some candidates failed to identify the stakeholders in the retirement fund industry properly (bookwork) and this resulted in answers being poorly structured or not covering enough points. Some candidates spent time defining an economic recession instead of focussing on the impact thereof. The better candidates also clearly distinguished between defined benefit and defined contribution funds (although in the latter case few identified the impact of dissatisfied members on funds / trustees).

In part (ii) candidates generally did not focus on the reasons local retirement funds showed better returns and often commented on the economy in general.

- (i) List the points that you would make on the impact of an economic recession on the South African retirement fund industry.**

The State

- they may delay reform initiatives while focussing on other issues
- more immediate socio-economic problems and demands on the fiscus combined with reduced tax income
- may want to assess impact of recession on proposed reform design
- consider legislation that might mitigate the impact of future recessions impact on funding of government-backed retirement funds (government employees and other parastatal or local authorities) - issues below as for other employers

Regulator / Financial Services Board

- Extra work: liquidations, transfers etc. due to economic impact
- and assessing plans to meet deficits of unsound schemes

Employers

Defined Contribution funds (DC):

- many will be struggling financially, thus difficult to afford contributions
- the impact may be less here, as the employer expense is fixed
- may have to deal with unhappy members whose benefits have reduced
- but this only applies on exit
- which might be the case if the company had to retrench staff
- Employers who converted to DC schemes from previous DB arrangements during the past 5 years are likely to come under pressure from unhappy members
- Employees less likely to accept voluntary early retirement packages due to reduction in retirement benefits

Defined Benefit funds (DB):

- a valuation in depressed markets may produce increased costs
- particularly in respect of accounting valuations' pension costs
- because:

- best estimate valuation assumptions are likely to have strengthened - interest rates decreased while inflation remained high
- market value of assets decreased
- hence triple impact of increased liabilities, decreased asset values and higher required contribution rates
- at the least opportune time (when employers can least afford it)
- may need to develop an affordable funding plan if statutory valuation shows a deficit
- greater pressure from shareholders now to consider converting, but less funds available to make conversion attractive to members. Conversely members may consider converting on less favourable terms to keep their jobs
- may prefer a more conservative investment strategy but that may ultimately mean lower returns and therefore increased costs

Active Members

DC:

- they will be concerned by the reduction in benefits
- this depends on investment strategy and exposure to equity markets
- retrenched members exposed to market will have suffered material losses
- members close to retirement might have to postpone retirement
- exacerbated by the increased cost of purchasing pensions in the light of lower interest rates (which happened at the same time) if their investments were not appropriately matched
- in-service stayers should be fine and need to understand that the long-term consequences are not as bad
- members may panic and switch to conservative investments (which may be inappropriate to their long-term risk profile)

DB:

- younger stayers should be less concerned about benefits (except to the extent that MIR based on the accumulated contributions would have decreased)
- exits might have to accept reduced benefits if valuator uses market value adjustments; or if MIR is the deferred pension using 40% of ALSI
- may be concerned that the employer will try to convert/reduce benefits and with lower security of benefits as funding levels fall
- members close to retirement may postpone retirement because reduced interest rates have made purchased level or fixed-increase pensions more expensive (if they are outsourced)
- Purchase of with profit annuities might be less desirable as most pools will be underfunded

Pensioners and deferred pensioners

- Depends on fund's investment strategy in respect of pensioner assets
- Lower money market rates and equity returns are likely to translate into lower investment returns on pensioner assets in any event
- This will in turn result in lower immediate pension increases, despite inflation rates being high
- Legislated minimum pension increase is based on a percentage of inflation subject to affordability and will also not provide full protection to pensioners

- Pension increase policies may be revisited and funds may again consider outsourcing pensioners
- Lower funding levels are likely to affect funds' ability to provide future pension increases at similar levels as historical increases

Trustees/Fund

In general:

- extra activity and meetings e.g. liquidations, transfers
- consider pension increase affordability; manage these expectations and ensure pension increase policy still appropriate / relevant

DC:

- Will have to deal with member expectations, complaints and even legal proceedings:
 - especially if recently converted from DB fund
 - or if regular projections of retirement benefits are provided, now showing lower benefits
- Critical that additional member communication and education done to explain:
 - long-term nature of retirement fund investment
 - importance of matching investment to member's investment term and risk profile
 - to avoid panic switching from members
 - cyclical nature of investment markets
 - and ensure members understand the risks involved in DC funds (maximum of 1.5)
- Review investment choices to ensure members have a reasonable range of risk profiles to choose from
- If investment choice not in place, review investment strategy to ensure it is appropriate for the bulk of the membership, consider offering member investment choice

DB:

- review investment strategy in light of impact of recession on level of reserves/surplus and the employer's finances/affordability
- extra communication to members may be necessary (point already awarded)
- valuations in this period are likely to show declines in funding
- if market value of assets is used (which is more common now) and if changes in liability assumptions don't offset this
- but interest rates decline at the same time, thus exacerbating the loss
- ensure employer's covenant is strong (greater scrutiny of employer's financial situation required)
- communication with the employer:
 - discuss funding requirements and likelihood of investment recovery
 - possible change in investment strategy
 - options available to manage the situation as a last resort, close / terminate / convert)
- inform Registrar of Pension Funds of financial position; submit plan for funding deficits
- ensure that granting of discretionary benefits (e.g. greater benefits to retrenched employees) doesn't unnecessarily prejudice fund or employer's ability to finance it
- trustees must act fairly and avoid / manage increasing conflict-of-interest situations and in terms of fund rules

Actuaries

- an interim valuation to assess impact may be required; there may be extra valuations due to wind-ups
- Careful consideration of valuation assumptions for funding valuations and accounting valuations
- extra benefit calculations and transfers
- trustees may desire additional ALM as part of investment strategy review
- trustees will require additional advice and guidance on dealing with resulting fund issues (particularly in dealing with employers if the Fund is in deficit)

Investment managers

- decreased income due to decreased asset values (and fees normally based on market value of assets)
- much more interaction with clients will be required to manage expectations (and possible complaints)
- manage the funds out of recession, but there is only so much they can do
- consider revising strategies; implement amended mandates
- possible consolidation of managers

More work for administrators, lawyers, consultants and the Pension Funds Adjudicator (although longer term income may reduce if funds have to close down).

(ii) Explain why South African retirement fund investments performed better than their international counterparts.

- legislated restrictions on SA investments in pension funds
- regulation 28 of the Pension Funds Act
- reducing exposure to the most risky of assets (e.g. equities) and overseas assets (important)
- the Rand's depreciation over the 2008 Calendar Year (which offset about 50% of the global equity losses)
- SA economy and financial system not as badly affected by global crisis, because
 - SA banks not really invested in toxic assets (and not heavily invested in overseas banks with sub-prime exposure)
 - National Credit Act curtailing local lending before the global crisis
 - 2010 World Cup activity supporting capital projects (building and engineering industry) during the crisis
 - Strong commodity prices (to which our economy is still linked) softening the blow

QUESTION 2

This question related to the risks that the structure of death in service benefits can bring to defined contribution funds and how these risks can be managed.

Part (i) on the structure of the benefit was not that well answered with candidates not identifying enough of the points. Part (ii) on the calculation of the amount at risk was reasonably well answered. Part (iii) on the risks to the Fund of the way in which the benefit is reinsured was not that well answered by the average candidate. Some candidates failed to mention the risks involved in paying dependant pensions. Few candidates realised that a risk reserve could be used to manage the mismatch between the benefit due and the amount insured and purely focussed on changing the benefit structure. Part (iv), dealing with a possible change in the benefit structure, was not that well answered. Candidates often proposed alternative structures without commenting on the practical implications of implementing the requested change (which results in a reduction in benefits for some members).

(i) Outline the advantages and disadvantages of the death in service benefit (lump sum and dependant pensions) from a member's point of view

Advantages:

- Needs based, providing benefits on death to members with dependants
- And a lump sum for immediate expenses
- Increases automatically as new dependants are added (marriage, children) and as salaries increase
- Generous by industry standards, especially for new entrants and members with many dependants
- Members are likely to all pay the same contribution in respect of this benefit (since the same benefit applies to all), so it's good value for older members with dependants

Disadvantages:

- Actual benefits can differ significantly between members with the same age, salary and service – might seem inequitable to members
- Members are likely to all pay the same contribution in respect of this benefit, which is poor value for members with no dependants or longer serving / older members with high member accounts
- Generous benefits imply higher costs than industry. Some members may prefer higher net retirement contributions
- Generous benefits by industry standards and unlikely to be reciprocated should member change employers or retire. Cost of buying additional cover can be prohibitive at that stage.

(ii) **Describe how you would calculate the amount to be insured in respect of the death in service benefit at the commencement date, assuming the same reinsurance arrangements will be used as in the previous fund. Include a list of the assumptions required and any issues that have to be considered in this regard.**

- General point on assumptions:
 - Best estimate, but
 - Retain a margin to allow for the fact that there is no easy way to deal with deficits
 - Can be based on the previous fund's experience if sufficient data is available and the membership is similar
 - Alternatively use experience with other similar funds
 - Or national data (such as for family statistics) appropriately adjusted for the Fund's demographics
 - Allow for any trends in historical rates

- List and comments on specific assumptions:
 - Mortality rate for members (separately for male / female and per age)
 - allowing for the impact of HIV/AIDS
 - Proportion married at each member age
 - Consider adjustment for multiple spouses if rules allow
 - Allow for actual definition of spouse in the Fund rules (may include cohabitation for instance)
 - Average age of spouse (or age difference)
 - Average number and age of children at each member age
 - Mortality rate of dependants after death of the member (determined similarly to the above member rates)
 - Provision for future pension increases: What is the pension increase policy in the new Fund?
 - Discount rate: Consider the investment strategy in respect of pensioner assets
 - Expenses: of paying future dependant pensions

- Calculate amount at risk for each member:
 - Add the lump sum benefit and
 - The capital value of the spouse's pension on death (allowing for spouse's benefit, spouse's age, mortality, future pension increases) and
 - The capital value of the children's pensions on death (allowing for children's pensions, ages, mortality and future increases)
 - Less the value of the member's account
 - Subject to a minimum of zero (since members must receive a minimum benefit equal to their member account)
 - Sum the amounts at risk across the membership and divide by total salary roll to arrive at the multiple of salary to insure

(iii) Discuss the risks to the Fund of the way in which the death in service benefit is structured and reinsured. Indicate how you intend dealing with these risks.

(Risks in normal type; ways to deal with the risk in italics)

- Fund liable for benefit, insurer only for the insured multiple of salary. There will be a difference between amount insured and value of benefit due to a specific member. This can result in a shortfall for the Fund.
 - Change the rules to reflect a benefit equal to that insured [this applies to many of the other risks below]
 - *Keep a reserve to cover possible shortfalls in the reinsured amount compared to the benefit payable:*
 - Any profits on death will offset the cost of any shortfalls
 - If such a reserve does not exist already, it can be accumulated by deducting an additional margin from contributions or a cash injection from the employer
 - Check the provision of the Fund rules in respect of changing contributions and setting up such a reserve
 - Either the calculation of the reserve or the insured amount has to contain margins to allow for the impact of salary increases, investment risk on member accounts, assumption risk
 - The balance in such a reserve has to be monitored regularly to ensure that there are no unexpected shortfalls

- Several risks related to calculation of benefit once in three years:
 - Investment risk: big fall in member account increases amount at risk.
 - Salary increase risk: salary increases result in the benefit increasing proportionately but not the member account, hence increasing the amount at risk at a faster rate than the insured amount.
 - Demographic movements may occur in the membership which may change the average amount at risk during the valuation period
 - *The above can be mitigated to some extent by calculating the insured amounts every year*
 - *Or by expressing the multiples per age or age band*
 - *Or by changing the rules to reflect a benefit equal to that insured* [awarded]

- Assumptions used, particularly in respect of dependants, may be inaccurate
 - *Analyse fund experience regularly to check mortality assumptions*
 - *Members can be requested to confirm their exact dependant details on a regular basis (on entry and annually thereafter)*

- Risks related to the payment of pensions to dependants:
 - *Significant pensioner longevity risk*
 - *Ensure that the lump sum insured caters for the latest expected improvements in mortality*

- Since female spouses are usually younger than normal retirement age (young spouses may still be paid for up to 60 years)
 - *Can purchase pensions for the dependants on death instead of paying them from the Fund*
 - Investment risk on pensioner assets
 - *Invest the pensioner assets appropriately to match the incidence of pension payments and pension increase policy*
 - Expense risk on pension payments
 - *Fund already holds a solvency reserve in respect of pensioners and this should take many of the above into account*
- Find a reinsurer that will reinsure the exact benefit (although this may have cost implications)
 - Insolvency of the reinsurer or inability to pay claims
 - Use a reinsurer of good standing

(iv) Some members have requested that the benefit in the Fund be changed to a flat three times pensionable salary lump plus the member's account, to bring the benefit in line with that provided by other funds in the industry. The trustees have asked for your advice on the impact of such a change. Set out the points you would make in your response and suggest a way forward.

- Should result in a decrease in the average benefit per member and hence a decrease in insurance premiums
- allowing for more retirement saving
- Results in significantly less risk for the Fund since reinsurance can be done accurately and no pensioners are paid
- And a much simpler benefit structure (easier for members to understand, and for administrator)
- Fits the defined contribution rationale better – there is less cross-subsidisation (no distinction according to number and age of dependants)
- Reduction in death benefits for many existing members (young with dependants)
 - could cause dissatisfaction among members affected
 - check whether fund rules allows for a reduction in benefits, process required
 - check employment contracts / may need to negotiate
- Increase in benefits for some members (e.g. single members)
- Can be a big discrepancy in benefits depending on when a member dies (day before or day after implementing the change)
- No need to accumulate risk reserve (or any existing reserves can be released)
- Reduction in benefits is a major stumbling block and unless members can be compensated for the loss of benefits, it is unlikely to succeed.
- Way forward:

- Engage membership or their representatives to gauge the level of support for such a proposal
- Investigate the provision of the alternative benefit as an option to members (if perceived to be better value), although this is likely to lead to anti-selection
- Try to determine reason for proposal. Response would depend on outcome:
 - Communicate the value of existing benefit structure to members (if members do not understand the value thereof)
 - Pay dependants benefits as a lump sum (if pensions perceived to be poor value)
 - Obtain legal advice to confirm process required to implement a change (if decide to go ahead)
- Introduce new structure to all new employees only
- Retain promise of a death benefit equal to the nominal value of the total death benefit at a certain point. Inflation/salary increases will reduce cost of underpin over time – use risk reserve to subsidize this cost.
- Consider a higher multiple e.g. 4 times or a multiple equal to current insured amount for all

QUESTION 3

This question dealt with a possible change in financial position on discontinuance, setting of contribution rates and utilisation of surplus by an employer.

Parts (i) and (ii) were reasonably well answered by all the candidates, although the poorer candidates did not understand the finer details of the adjustments required in part (ii) to derive a discontinuance liability on a different basis. The answers to part (iii) varied in quality, with some candidates not providing a numerical estimate of the future employer contribution rate as was required. Marks were awarded where candidates estimated an attained age method contribution rate with reasons for using this approach. In part (iv) a number of the candidates missed the basic principles of setting contribution rates (bookwork) and hence scored poorly.

Part (v) was generally poorly answered. The scenario was that a participating employer approached the trustees with two alternative ways of utilising the employer surplus (without knowing the quantum of that surplus). In practice a board of trustees would first need to quantify the surplus available to the employer for each option, with due consideration of the complications arising in an umbrella fund. The quantum of the surplus is likely to be the main factor influencing the employer's decision. Then the legal and other implications of the two alternatives need to be considered. Candidates generally only dealt with the latter part of the answer.

i) Explain how the four economic assumptions provided were derived, stating any additional assumptions that are required.

- Inflation of 5.34% is from $(9\% - 3\% - 0.5\%) / (1 + 3\%)$
- The 0.5% is a (common) adjustment (or risk premium) to cater for the uncertainty between the inflation priced into the market and the expected long-term inflation that is required for a valuation

- Discount rate of 10.63% is from $9\% + (65\% \times 2.5\%)$
- This assumes a (commonly used) long-term asset split of 65%/35% between equities and bonds (which is also the current split)
- Assumes that this is net of associated investment expenses

- Salary increases of 7.34% comes from inflation plus 2%
- Historical salary experience shows that this gap is 1% to 2% above inflation.
- 2% is at the high end, which may be because there appears to be no allowance for additional promotional increases.

- The equity premium (or risk premium) is the additional historical return that equities have provided. It is usually between 2% and 3%.

ii) **Determine the surplus in the scenario that the fund is discontinued, stating any other assumptions and estimates that you make.**

Ongoing basis:

- The pre-retirement net discount rate (NDR) is $(10.63\% - 7.34\%)/1.0734 = 3.06\%$
- Final average salary (FAS) factor based on expected retirement FAS
- $= (1/1.0734 + 1/1.0734^2)/2 = 0.90$
- $[1/1.0734^{0.5} + 1/1.0734^{1.5}]/2$ is also fine]
- Expected pension increases are $80\% \times 5.34\% = 4.27\%$
- The post-retirement NDR is thus $(10.63\% - 4.27\%)/1.0427 = 6.09\%$

Discontinuance basis:

- The net discount rate (NDR) is 2.80% (the MIR rate)
- MIRs based on actual FAS
- FAS factor is $(1/1.1 + 1/1.1^2)/2 = 0.87$
- The post-retirement NDR is 5%
- No need to adjust for in-service mortality, as it is ignored
- Mortality adjustment required. The annuity is approximately 2% more expensive per year rated down. [Candidates could get an indication from their Formulae and Tables]
- Assume that this is similar between male and females and around those ages and that the mix is half-half.

Estimated discontinuance liabilities:

- Need an assumption for the impact on the liability of a 1% decrease in the post-retirement NDR. Approximately 10% to 12%, say 11%.
- Actives' ongoing liability of 450
multiply by
- $(1.0306/1.0280)^{20}$ to adjust for the change in NDR until retirement
multiply by
- $0.87 / 0.90$ being the FAS adjustment
multiply by
- 1.02^2 or simply 1.04, being the mortality adjustment
multiply by
- $(6.09 - 5.00) \times 11\%$
equals
- Actives discontinuance liability of R532 million
- assuming that the accumulated contributions part of the MIR does not exceed the deferred pension MIR by a significant margin
- Pensioners' ongoing liability of 350
multiply by
- 1.02^2 or simply 1.04, being the mortality adjustment
multiply by

- $(6.09 - 5.00) \times 11\%$
equals
- Pensioners discontinuance liability of R408 million
- In theory the post-retirement adjustments for the mortality and discount rate change should be slightly different for actives and pensioners due to the higher average age of pensioners. (The candidate should either explain any difference allowed for or state that it is assumed the impact is the same)
- Add expenses of 1.5% = R14 million
- Employers' surplus is therefore $1000 - 532 - 408 - 14 = R46$ million
- assuming there are no other significant liquidation expenses

iii) If the Fund were to close to new entrants, estimate the employer's future contribution rate, as a percentage of salaries, to fund ongoing benefit accruals. State your assumptions.

- Assume that the calculated 20% is the required retirement contributions not adjusted for any other reason such as deliberate overfunding by the employer or for a contribution holiday.
- And that it funds for liabilities on the best-estimate basis, as opposed to the solvency reserve basis
- Since funding uses PUM, the rate will steadily increase as retirement benefits get closer, on average
- 1st year PUM rate is 20%, thus 20th year's rate estimated at $20\% \times (1.1063/1.0734)^{19} = 35.5\%$
- Average employer rate is therefore $27.7\% - 6\% = 21.7\%$

iv) Describe the main issues pertaining to setting the employer's contribution rate that the trustees should consider.

- Fund rules
- Legislation (and forthcoming changes expected)
- Strike a fair balance between interests of different beneficiary classes
- Need to be aware of potential conflicts of interest
- Obtain specialist advice from the actuary
- Who would in turn look at professional guidance
- Trustees must interpret "the balance of the cost of benefits"
- Obtain legal opinion if necessary
- Is this on an best-estimate or solvency basis?
 - Relevance of best-estimate vs. solvency depends on strength and commitment of employers
 - Compounded by there being numerous unrelated employer entities
 - If the employers are committed to the scheme and are financially strong, then a best-estimate funding basis is probably acceptable.

- Actual cost depends on actual benefits paid; unknown in advance
- Pace of funding is the issue
 - PUM: stable if the fund demographics is stable, but if closed then PUM rate will climb and could become onerous in longer term
 - Attained Age Method: becomes more relevant if closed to new entrants
 - AAM builds surplus in early years to reduce future required rate
 - This is only sensible where future surplus belongs to the employer, which is the case here, although this is also complicated by different employers being involved

- The trustees need to get information from/about the employers
- What can they afford to pay? Are credit ratings available?
- Would the employers be able to meet an increased rate due to a deficit in future? Could it make them insolvent? Run various future scenarios.
- What is their attitude to the Fund? If closed to new members, they may want to minimise costs.
- Are employers getting independent advice? How does it compare?

- What/who can trigger a wind-up?
- What happens if a participating employer withdraws from the Fund; what are the powers to recover any debt (and on what basis)?
- Would taking a hard line and demanding a high level of contributions really be in the best interest of all beneficiaries?

- v) **Outline the issues that you would take into account in response to a participating employer's request to utilise the employer surplus to avoid retrenchment or assist with the cost of winding up their operations.**
 - Fund rules relating to partial liquidation and retrenchment benefits
 - Legislation pertaining to partial wind-ups and surplus usage
 - Section 15E of the Act covers the utilization of the employer's surplus
 - They can take cash on liquidation (Scenario A)
 - But, importantly, they can also access cash if it will avoid retrenchments (Scenario B)
 - The basis used will depend on which scenario the employer adopts
 - Allocate assets to each employer in proportion to liabilities
 - Check for any special events since the surplus apportionment date that may result in a non-proportionate allocation, such as cash injection by a specific employer or over-contribution or bulk transfer of members or pensioners without taking a portion of the employer surplus with
 - Use ongoing basis to do this, since other employers are not winding up
 - Ordinarily, employer surplus on an ongoing basis would be determined after deducting the solvency reserve

Scenario A – partial liquidation

- The terminating participating employer need not retain a solvency reserve
- Unless the fund was going to retain the pensioner liability

- It would then need to keep a significant (more conservative) solvency reserve since the trustees will have no recourse to further funding.
- But this wouldn't be sensible. Pensions should be insured, in which case the solvency reserve can be ignored (i.e. implicitly included) in the surplus for distribution.
- The surplus for this employer would then be their share of the assets (pro rated using the ongoing basis as above) less
- The cost of the insured pensions (need to get quotes) less
- The member's benefits retrenchment benefits
- On a discontinuance basis (less an allowance for liquidation expenses)

Scenario B – cash to employer to avoid retrenchments

- The ongoing basis would be used to identify each employer's share of the surplus, in proportion to their liabilities, but after the deduction of a solvency reserve
- The main issue is whether the solvency reserve should be calculated at an employer level (accurate, but more work and it may be the first time this has been done), or whether it should also simply be pro rated in proportion to liabilities
- The accurate method is unlikely to be significantly different, unless the membership profile of this employer differs markedly from the rest of the fund
- There is a selection risk here, namely that the employer takes the retrenchment cash out first (which is likely to be higher than the liquidation surplus since it is calculated on a ongoing basis) and then liquidates anyway, leaving the Fund short and with the employer unable to make good any deficit.

END OF MARKING SCHEDULE