EXAMINERS' REPORT

June 2013 examinations

Subject F104 — Pensions & Other Benefits
Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principle Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions. As a rough guide, half a mark would be given to each distinct and relevant (and reasonably significant) point made, up to the maximum number of marks for that sub-section of a question.

QUESTION 1

For:

- Increases levels of savings
- Develops capital markets
- The extra investment may stimulate economic growth
- Eases the pressures of an ageing population
    - The increased cost will have been partly funded by the ageing cohort, not entirely by the current younger generation.
- Investment returns reduce long-term cost of benefits
- Individuals may feel their benefits more secure if funded

Against:

- Savings may just be redirected without increasing overall.
- An increase in overall savings may not create real investments (e.g. infrastructure etc)
- While it eases, it does not solve the problem of an ageing population (unless the move to funding is so complete as to remove any inter-generational cross-subsidies)
- If PAYG is in place, transition from PAYG to funding could be problematic
- The fund may be a political temptation (diverted to other uses)
- Security of benefits probably less dependent on funding than on government's ability to raise money (taxes, borrowing)
- Cross-generational subsidy may be desired to enhance solidarity
- A country with a high birth rate and growing population may be able to fund PAYG easily
- Benefit payments can start instantaneously, without having to accrue over time

This was a bookwork question, generally well-answered.

QUESTION 2

   i.   Reasons & examples:
- a. Size of the whole population to estimate future demand for food, power, services (e.g. transport) and products (e.g. houses)
- b. Size of working population vs retired population to estimate contribution rates for a PAYG State retirement scheme
- c. Estimate future need for specific welfare services (e.g. orphans, disabled, etc)
- d. Size of the working population at some future time to estimate income to state from taxes
- e. Size of working population within a specific earning bracket to estimate the impact of introducing a state pension fund for those workers
- f. Any other reasonable examples

   ii. Models:
- a. Exponential:
  - i. $P(t) = Ce^{gt}$ where C is a positive constant, g represents a constant rate of growth.
  - ii. Unrealistic in that for g>0, the population increases without limit

- b. Logistic:
  - i. $P(t) = g/(Ce^{-gt} + k)$ where C, g & k are positive constants
  - ii. K represents the rate at which the population growth rate decreases as the population gets larger.
  - iii. The theoretical upper limit of the population would be = g/k

Did not accept the 'component method as an answer? This was a bookwork question, generally well-answered, though candidates lost marks in part (i) because of vagueness and not giving examples of proper sub-populations.

QUESTION 3

Being medium sized, it would be reasonable to assume that the death-in-service benefits are insured.

1. Would suggest that EC & MC remain unchanged and that any balance of the EC after payment of admin expenses (probably global % salaries) and the risk cost (individual % salaries depending on cover choice), be credited to the members' shares for retirement.
   a. This would achieve equity between members in respect of their cover choices
   b. There would still be age/gender cross-subsidies, but this is normally acceptable for a group benefit.
      i. The latter may be aggravated by the members' cover choices
   c. An alternative would be to ask for additional member contributions in such a way as to preserve equity.

2. Having a widow's benefit is archaic, if not actually legally discriminatory.
   a. Suggest that they take the opportunity to offer a spouses' rather than widows' benefit.
   b. Also suggest there should be a children's pension payable as a % of the spouses'
      i. E.g. up to 3 children at a time, payable to age 18, doubled if no spouse
      ii. Would also cater for one parent families and where both parents die

3. Too extreme a range of possible choices:
   a. At 0 times and 0% it would be inadequate, especially if there are dependants
      i. Sponsor would not want the reputational risk of a death in such a case.
   b. At 6 times and 100% cover would be excessive:
      i. E.g. say 10% spouses' cover had PV of 1 times annual Sal (conservative for young spouse if allowing for increases)
      ii. Cover would equate to about 16 times ann Sal
      iii. At these levels would probably be uninsurable on ordinary terms
      iv. Would also divert a lot of contributions away from retirement benefits
   c. Have a default level of benefits for those who did not wish to choose.

4. Set some limits in place, e.g.:
   a. Minimum 1 times Sal and 0% spouses' if no dependants
   b. Minimum 1 times Sal and 40% spouses' if there are dependants
   c. Maximum in terms of cost of 7.5% salaries less admin cost
      i. i.e. would ensure full MC goes to retirement funding at all times.

5. Potentially serious anti-selection problems:
a. Member has greater knowledge of his mortality factors than the insurer e.g.
      i. Health problems
      ii. Hazardous pursuits/lifestyle

b. Member able to substantially increase cover in quite short-term
c. U/W likely to institute much stricter underwriting procedures for cover increases
d. Possible loss of many benefits of a group risk arrangement, e.g.
    i. Fewer medical examinations
    ii. Lower admin expenses
    iii. Lower rates generally

6. Members most likely to want to change cover on some life events:
    a. E.g. marriage, divorce, birth of child, coming of age of child, etc
    b. These are not likely to coincide neatly with the beginning of year option point
    c. So need more flexibility to exercise the option as-and-when for life events
    d. These would not, however, pose as much of an anti-selection risk.

7. General increase in administration (and associated costs):
    a. Changing risk schedule periodically
    b. Need to get cover choice notified in writing before implementation

        i. Otherwise option regarded as not having been exercised
        ii. Need to get underwriting/medical results before finalizing cover
        iii. Possibly offer accident cover in the transition before cover acceptance
    c. Clear and regular communication with members would be needed.

Candidates were asked for 'comment, advice, suggestion, and elaborations'. A number of candidates did themselves a disservice by answering with a barrage of questions, the answer to many of which, they, as actuary to the scheme, would be expected to know. No credit was given for asking whether the Rules allowed the change or pointing out that they needed changing. Some candidates spent time on the issues of 'insurance vs self-insurance'. This was not being asked for. Marks were given to some candidates who pointed out that the cost of the same benefits for those with dependants might rise as the element of cross-subsidy from those without dependants decreased with their choice of reduced benefits. This question was mostly poorly answered and required intelligent marshalling of the principles. This served to differentiate between the better candidates and those who were less well-prepared.

QUESTION 4

i. SCRs
  a. AAM: 33000/(15750/7.5) = 15.71%
  b. EAM: 900/(600/7.5) = 11.25%
  c. CUM: (570x1.09 + 20909x0.09)/(900/7.5) = 20.86%
  d. PUM: 1350/(900/7.5) = 11.25%

ii. ALs:
  a. AAM: 7500 + 4500 + 49500 + 33000 − 15750x15.71/7.5 = 61500 (accepted just using the PUAL approach)
  b. EAM: 7500 + 4500 + 49500 + 33000 − 15750x11.25/7.5 = 70875
  c. CUM: 7500 + 4500 + 20909 = 32909
  d. PUM: 7500 + 4500 + 49500 = 61500

iii. Surplus/(Deficit):
  a. AAM: 63000 − 61500 = 1500
  b. EAM: 63000 − 70875 = (7875)
  c. CUM: 63000 − 32909 = 30091
  d. PUM: 63000 − 61500 = 1500

iv. MCRs:
  a. AAM: 15.71 − 1500/(15750/7.5) = 15%
  b. EAM: 11.25 + 7875/(15750/7.5) = 15%
  c. CUM: 20.86 − 30091/(15750/7.5) = 6.53%
  d. PUM: 11.25 − 1500/(15750/7.5) = 10.54%
  e. AM: (4500 + 7500 + 49500 + 33000 − 63000)/(15750/7.5) = 15% (expected this to be calculated as per the question, not just derived from some general rule)

This question was reasonably well-answered and would be reasonably easy for the well-prepared candidates. Areas of difficulty seemed to be the CUM SCR and the AM MCR.

QUESTION 5

- Consider the purpose of the valuation:
  - And hence the strength of the basis needed – strong, realistic or weak?
    - Need to look at the strength of the basis as a whole in deciding where to pitch the withdrawal assumptions
    - Strength of basis might include the funding method (e.g. AAM with strong assumptions will lead to larger surpluses emerging)
    - Expected funding level (e.g. a large surplus) may give one more flexibility in deciding the strength of basis.
  - 'on-going basis' – to what extent do you want to anticipate the release of future surplus
    - This may depend on the financial strength of the sponsor
    - E.g. a strong sponsor may be content to pay a higher contribution rate now (i.e. a stronger basis with lower withdrawal assumptions) and be content to take advantage of the surplus when it emerges later.
  - 'Discontinuance basis' – e.g. if one wants to cover early-leaver benefits, the withdrawal assumptions may not be relevant.
  - For a very small scheme, one may want to assume nil decrements to reduce vulnerability to fluctuations in experience.
  - Must take into account the size of the withdrawal benefits relative to the actuarial reserves held.
    - If wdl ben < AR, then generally, higher wdl assumption implies weaker basis and vice versa.
    - If wdl ben = AR, then wdl assumpts not relevant, since cost neutral.
- What assumptions used in previous valuation?
  - Tend to maintain stability in basis
  - Only change if there are good reasons for doing so
- Discuss with management whether any retrenchment exercises coming up
  - Scope of such an exercise
  - What retrenchment benefit would be paid (often more than ordinary withdrawal benefit)
  - Do you want to make some short-term allowance for such an exercise
- Withdrawal rates can be significant, especially at younger ages

- o Variation of assumptions from experience may be large
- o May want to do some sensitivity-testing to estimate the significance of such variations
- At younger ages, a return of contributions on withdrawal may be larger than the theoretical AR
  - o In these cases a higher wdl assumption would be more conservative, not weaker.
  - o Unless, for the purposes of the valuation, the actuary sets the AR= ret of conts for these ages
  - o In which case the significance of the wdl assumption at these ages falls away
- Size & duration of scheme will determine how much data available for estimating wdl rates:
  - o Since wdl rates can be large, less data is needed than e.g. for estimating mortality rates
  - o May also be data from industries, national stats
  - o May have standard actuarial tables which can be modified by the available data for smaller schemes
  - o Split data into homogeneous groups
    - ▪ Expect e.g. classification by gender, blue collar, white collar, management
    - ▪ But check that sub-groups not too small. Need to balance homogeneity with credibility
  - o Consider relevance and credibility of past data:
    - ▪ Consider social/economic conditions that might have affected rates in the past
      - • E.g. recession may reduce voluntary turnover rates
      - • Consider how such conditions may change and affect rates in future
    - ▪ Identify any trends
    - ▪ Consider changes in withdrawal benefits in past that might have changed rates
      - • E.g. improvement in wdl bens may increase rates of wdl
    - ▪ Consider past changes in balance of homogeneous groups (e.g in gender split)
    - ▪ Consider possibility of errors in recording of older data
    - ▪ All the above changes may impair the relevance of older data

This was a straight-forward question but was not well-answered on the whole. A number of candidates misunderstood the question and spent time discussing the assumptions that might be used to calculate withdrawal benefits. No marks were given for this as the question made clear reference to the 'actuarial valuation'.

QUESTION 6

- Possible restrictions on the option:
  - Is there a legal framework for such a transfer to take place?
  - In any event, there are probably legislative restrictions (i.e. cannot 'do with as they wish')
    - Typically the cash benefit may be limited to a proportion of the value and the rest used to purchase a life annuity.
  - If a member has dependants (spouse/children) at retirement:
    - Would the trustees/sponsor be happy that the dependants get no benefit on the death of the member?
      - Reputational risk
      - Seems to be contra the spirit of the rules
    - So perhaps require that some provision be made for dependants*. This could be by way of:
      - Purchase of contingent annuities
      - Single premium purchase of suitable life assurance on the life of the member
      - Use of a so-called 'living annuity' where the balance of the consideration reverts to the dependants on the death of the member.
  - Would the trustees be happy that the member makes no provision for pension increases?
    - Would be a strong temptation for the member to take a higher initial pension without allowance for increases
    - But what level of increases would the trustees regard as adequate, as they themselves are operating on a discretionary basis?
    - Perhaps a 'with profit' type annuity may be acceptable
    - Also, the current Rules intend that the exercise of the commutation option by the member at retirement should not impinge on the value of the contingent dependants' annuities.
      - If this feature is to be preserved and the trustees require provision for dependants, the member would not be able to take 1/3 of the upliftment amount in cash.

- It would be a lesser proportion as it would not include 1/3 of the value of the contingent annuities
- This, in itself would raise a communication problem as the member would have a simplistic expectation of '1/3 cash'.

- 'Living Annuity' arrangements are not suitable for all members (e.g. if financially naive or the amount too small)
  - These should be based on suitable professional advice, both:
    - Initial advice as to whether to go with a living annuity
    - On-going advice about draw-down rates
  - Trustees could make option subject to proof of such advice being taken.

- In all of the above, trustees face the philosophical dilemma of 'paternalism, caution, complexity' on the one hand vs 'freedom, simplicity, risk(to members) on the other. They need to decide where they want to place themselves in that spectrum.

- Would the option be limited to future retirees?
  - Theoretically it could be offered to current pensioners as well (making suitable allowance for contingent annuities already in place)
  - Could future retirees delay taking the option at retirement and exercise it later? Or will it be a once-off option?
  - Extension in this way could exacerbate problems with anti-selection which are mentioned later.
  - The scheme may already have purchased annuities iro current pensioners.

- Administrative and communication issues:
  - The new option would need to be communicated to active members (and perhaps pensioners)
  - Rules would need to be amended and approved by authorities
  - Fund information booklet would need to be updated
  - Require members/pensioners to apply in writing
    - With detailed quote for annuity purchase
    - With proof of advice received if appropriate
    - (may need list of approved advisors)
    - Have a process for approving the applications
  - Actual calculation will require actuarial input (with associated expenses)

- ▪ Payment for annuity purchase should go directly to the chosen provider, not via the member.
- • Calculation of amount:
- ▪ Could calculate on the valn basis:
  - ○ Would be cost-neutral from the valn viewpoint
  - ○ But the on-going basis is probably prudent
    - ▪ So upliftment on this basis means more goes out of the fund that might otherwise later have emerged as surplus – so an actual cost to the fund
    - ▪ Similarly, full allowance for future pension increases may vest such increases for the 'leaver' at a level that 'stayers' might not enjoy.
- • Possibility of selection against the fund, especially if pensioners can uplift at any time.
  - ○ E.g. market rates go up, annuity costs come down, but upliftment on prudent basis remains the same
  - ○ Fund may then have to realise assets when asset values are low
    - • Could calculate on a market-related basis:
- • Would help to avoid selection against the fund
- • More actuarial involvement for continually changing basis (with associated expenses)
- • Possible appearance of unfairness for two members of similar circumstances uplifting at different times
- • Use of general assumptions or actual member data (e.g. age of spouse)
  - • Actual member data probably more legally defensible
  - ○ Other factors:
    - ▪ Note that members exercising the option may be exposed to expenses (especially commission) which they otherwise might not have.
    - ▪ This is an option that is becoming more popular in other funds, so there might be some competitive pressure for the trustees to introduce it.
    - ▪ May be difficult finding annuities that match all aspects of the current, e.g. childrens' pensions with a discretionary termination age.
    - ▪ Does one take into account the presence of a surplus or deficit? Particularly, should the benefit be restricted in a deficit situation.
    - ▪ Consistency with current 1/3 commutation option?

- ▪ Consistency with TV calculations

This question was also poorly answered in general. Many candidates seemed to forget that the question was about an 'option' and seemed to argue on the basis that it was a compulsory change of benefits. Being a large scheme, the 'liquidity problem' was not the major issue that some candidates made it out to be (unless perhaps all of the pensioners exercised the option at once). Arguments that with the take-up of the option the scheme would become 'small' and listing the consequences of being a 'small scheme' were not given much credit. Some candidates formulated their main arguments around the commutation of retirement benefits for cash, though, in practice, this possibility would likely have been restricted by legislation.

QUESTION 7

- • Can provide benefits directly:
  - o Hence help to direct resources to vulnerable groups (e.g. orphans, disabled, unemployed).
  - o Actual financial benefits (e.g. old age pension)
  - o Structural e.g. free medical care
- • Benefits may be universal or means-tested (to maximise use of resources)
- • Educate people to make proper provision and understand risks (e.g. part of formal school education, television campaigns, etc)
- • State compulsion of individuals or Eers or both:
  - o Setting up Eer sponsored schemes
  - o Minimum level of contributions (individuals, Eers)
  - o Minimum level of benefits (in private or State schemes)
  - o Types of benefits (e.g. preservation on wdl, annuity vs LS)
  - o Could set up a contributory state-managed scheme.
- • Encouragement:
  - o Financial incentives (e.g. matching contributions)
  - o Tax incentives
    - ▪ Reduced tax on contributions, benefits, investment roll-up.
    - ▪ These may be restricted in a progressive tax system
- • Regulating private provision (to ensure good governance) and reduce risks:
  - o Require funding in advance
  - o Require regular actuarial valuations
  - o Regular auditing of finances
  - o Disclosure of information (to members and authorities)

- o Guarantees by insurance or central levies
- o Approval of fund rules
- o Restrictions on types/proportions of assets held
- o Restrictions on fees/charges
- o Restrictions on marketing/selling
- o Registration & Approval of service providers:
  - ▪ Administrators, asset managers, underwriters, trustees

A bookwork question very well-answered on the whole.

QUESTION 8

i. Security, stability, durability, realism, liquidity, legislation, flexibility, opportunity-cost. ('predictability' did not get a separate mark)

ii. It is true that cash provides almost risk-free capital protection
- o But cash returns are not a match for inflation and since DB benefits are salary linked, they are real liabilities. Cash is not likely to match these liabilities and the cost of funding will be increased
- o Capital protection and liquidity are not pressing requirements of the fund in the early years
  - o There are no initial accrued benefits. Benefits tend to accrue along with contributions
  - o Where benefits are unfunded (e.g death benefits) they can be insured
  - o Should be a positive cash flow in the fund for many years.
- o So it is common to invest initial funds in long term growth assets
  - o Historically, these have out-performed cash in the long term
  - o Main aim of the investment policy will be to maximise returns with an acceptable level of risk.
- o It is true that one does need sizeable funds to invest in direct property or direct (diversified) equities
  - o But there is a wide range of indirect pooled investment vehicles available for more modest commitment
- o There may be tax implications investing in cash.

This question was well-answered.

END OF EXAMINERS' REPORT