Faculty of Actuaries Institute of Actuaries

EXAMINATIONS

April 1999

Subject 404 — UK Fellowship Pensions

Paper One

EXAMINERS' REPORT

Comment: *The overall standard on Paper 1 was mixed, but it was encouraging to see some thoughtful attempts at the non-standard questions. Many candidates continue to reproduce at length apparently standard solutions without attempting to fit the principles to the specific questions asked. This misses many of the marks available and adds greatly to the time pressure which was evident on some scripts.*

Comments on individual questions follow the solution in italics after each question.

1 (i) Benefits

- Lump sum death benefits are tax free provided they are paid at the discretion of the trustees
- Lump sum benefits on retirement are tax free
- Pensions in payment are subject to tax as earned income

Investments

- Capital growth is tax free
- Investment income is tax free but ACT cannot be reclaimed

Contributions

- Employer contributions are not treated as a taxable benefit in kind for the employee
- Employer contributions are an allowable business expense
- Employer contributions are not subject to National Insurance contributions
- Employee contributions are deducted from personal taxable income before income tax

- Surplus refund to employer is taxable at a rate of 40%

The PSO restricts the tax concessions by imposing benefit limits e.g. maximum overall pension of 2/3rds of final remuneration.

Other PSO restrictions e.g. funding limits-surplus regulation, maximum employee contribution of 15% of remuneration.

(ii) Attractions

- top up benefits usually of capped employees
- i.e. broadly members who joined after 1 June 1989
- security for employees — set up under trust
- exempt from some pensions legislation
- no specific limit on benefit levels of retirement age
- benefits may be entirely commuted for a tax free lump sum
- death benefits not subject to inheritance tax

Tax treatment

- employees taxed on employers contributions as benefit in kind
- employees' contributions paid from taxed income
- investment income and gains subject to income tax and CGT
- employers costs of setting up scheme and contributions receive tax relief as a business expense

Part (i) was well answered although candidates needed to give precise answers to gain the marks. In Part (ii), many candidates concentrated only on the counterpoints to the advantages listed in (i). They missed marks by not addressing the purposes of unapproved arrangements.

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- The employer may attempt to be consistent in the treatment of early/late retirements across the two differing types of schemes. This can be difficult to achieve.
- Alternatively it may be addressed elsewhere in the overall benefit package for individual employees.
- Defined Benefit Schemes usually have fixed early retirement terms while defined contribution schemes are usually on a market basis reflecting market conditions at the date of retirement.
- If the schemes are contracted-out the pension is subject to a minimum.
- The minimum will be either defined benefit or defined contribution in nature depending on the basis of contracting-out
- Need to ensure complies with Trust Deed and/or over-riding legislation (e.g. IR limits)
- Is employer looking to encourage retirement

Early retirements

Defined benefit scheme

- If the overall aim is actuarial neutrality then no explicit assumption is needed.
- Otherwise an explicit early retirement assumptions e.g. x% retiring 1, 2, 3, ... years early

- Different considerations are likely for ill health early retirement
    - a PHI scheme may be in place
    - a more generous approach may be adopted. This will result in increased costs
- Employer/trustee consent is usually needed (to maintain control over costs)

The benefit design options include:

- Making the benefit equivalent in value to the leaving service deferred pension — this is the legislative minimum
- Actuarial equivalent to the past service reserve on the funding basis or a more realistic basis

- Pragmatic scale e.g. accrued benefit reduced by say 4% p.a. for each year early
- Accrued benefit unreduced — this is likely to result in a funding strain unless explicitly funded for

- Accrued benefit augmented

Defined contribution scheme

- Simpler to explain and understand
- Generally, simply the accumulated fund for the individual
- Employer/trustee consent not usually needed
- The amount of pension will be a function of the size of fund and immediate annuity rates at the time of early retirement
- Consideration will need to be given to the choice of investment funds as the member approaches the retirement e.g. switch to gilts and cash to protect capital
- It is possible to allow for enhanced benefits for ill health early retirement but these will need to be paid for at retirement
- An "underpin" may be possible

The overall standard on this question was good. Many candidates made heavy weather, however, by concentrating in detail on the actuarial and technical aspects of the defined benefit scheme only but provided only cursory commentary on the defined contribution scheme and the practical aspects.

3 (i)

- It may be required under the terms of the scheme's trust deed and rules
- To recommend a future contribution rate
- To assess funding level — on-going
- On discontinuance
- Minimum Funding Requirement valuation
- Accounting for pensions (e.g. SSAP24/FAS 87)
- If a bulk transfer is taking place/sale agreement
- Legal requirement e.g. for actuarial statement, surplus regulations debt on employer
- To investigate benefit changes

(ii)

- Recognize the valuation objective
- Collect data - scheme documentation/rules/benefit structure
  - asset data/membership data
  - data relating to the future operation of the scheme

- Details of previous actuarial advice, actuarial factors, actuarial reports

- Determine funding method — ensure consistency between assets and liabilities
- Determine funding assumptions — for assets and liabilities
- Data checks — e.g. reconciliation of number of members, missing data, consistency random spot checks
- Determine the value of the assets using the chosen method and assumptions
- Determine the value of the liabilities using the chosen method and assumptions
- Perform analysis of surplus
- Perform analysis of future service funding rate
- Produce valuation report setting out method, assumptions and results
- Cash flow projections/sensitivity analysis
- Pragmatism e.g. unnecessary to value every last detail
- Discuss results with trustees/employers

(iii) (a) Analysis

- Size of scheme will dictate how detailed the analysis

- Consider whether to analyse using old or new valuation basis

- Typically only analyse the major sources (salary, investment, etc.) although mortality can be important for large mature schemes

- Group data appropriately allowing for the size of the schemes

- e.g. for mortality — calculate for each age band the no. of deaths/no. of exposed to risk

- Consider members in force throughout the intervaluation period — cohorts

- Salary growth — divide current salary levels by those applicable for the same individuals at the last valuation — appropriate to perform analysis of total salaries for age groups

- Allow for assumed salary inflation including general inflation

- Analyse promotion/age-related increases separately

- Similarly for withdrawal and early retirements

- Investment performance — compare actual against expected by accumulating cash flow/assets at start by expected return and comparing with actual assets

(b) How are the results to be used

- Results should be used "with care"

- Useful check on method and assumptions and data

- Helps identify sources of surplus/shortfall

- Help understand how to achieve the desired level of prudence in the basis

- Unlikely to change economic assumptions

- Statistical assumptions — builds up a "bigger picture" and may justify adjusting some assumptions. Depends on significance of results e.g. for mature schemes pensioner mortality in material.

Part (i) was well answered. In Part (ii), candidates often considered only the regular triennial valuation and provided much detail on the assumptions and one or two other of the steps. They did not address the steps themselves, which was the main point of the question. In part (iii), the better candidates appreciated that an analysis based on annual valuations will be in respect of short-term movements which is unlikely to feed straight into assumptions. However, many candidates scored poorly because they confined themselves to general statements and did not demonstrate an understanding of the major steps in the analysis.

4 The following points are relevant for inclusion in an answer to the Finance Director. They should be set out in a well structured report or letter format which is clear, uses non-technical language and is not patronising.

Need to be clear of company's objectives, i.e. encourage part-timer participation. This will influence how the advantages/disvantages listed are perceived.

Company advantages

- Restricts the exposure to a final salary promise for those who elect the lower tier.

- Promotion of flexibility may be attractive to employees
- Depending on the supplement paid will make the value of the benefit promise clearer to individuals.

- Again, depending on the supplement paid, the company may be able to save money.

Company disadvantages

- The lower tier may be attractive to the part timers who currently do not have pension.

- Overall costs are therefore likely to increase although this will depend on the profile of part-timers.

- The cash payment will be subject to company National Insurance contributions whereas pension contributions are not.

- The cash payment is non-pensionable and will need to be accounted for separately leading to additional administration.
- Part of the company pension cost is met from existing surplus. The cash payments will need to be made from company cash flow.
- There will be additional communication and administration.
- Particularly for part timers who may change their hours.
- Staff may forget they received the cash when they retire.
- Depending on the supplement paid the company will provide different benefits (in cost terms) between staff: potential inequality
- Makes passing Reference Scheme test more complex

Staff advantages

- Additional cash maybe welcome and may make the scheme more attractive.

- Lower rate makes it more affordable for lower paid/part-timers.

- Staff may appreciate/value better what they currently receive.

Staff disadvantages

- Depending on how calculations of the cash sum are undertaken, staff maybe better or worse off (see below)

- If the additional cost is used for retirement saving staff will have less certainty of their final benefit.

Factors to calculate supplement

Target benefit

- Need to decide what benefit to value that is being lost e.g. pension on normal retirement, leaving service pension etc.
- Targeting one benefit may lead to higher/lower provision of another benefit. An appropriate compromise should be established.
- Depending on what benefit is targeted staff may feel the sum is over or under that which is necessary.
- If calculation is made specific to each individual this will be administratively cumbersome.

- But would ensure benefits are better targeted.
- Comparisons between individuals maybe difficult to explain.
- But if a simple approach is used, it is likely the supplement will not be sufficient in all cases to replicate the benefits foregone.
- But that may be outweighed by the flexibility to staff on how the money is spent.
- For the part timers, the calculations will need to be flexible enough to cope with changing periods of working.
- Depending on the mix of staff who select the lower option, we will need to ensure that the contracting out requirements continue to be met.

Assumptions

- The assumptions adopted for funding the final salary scheme will include margins.
- And will be appropriate for membership as a whole.
- They may not allow for discretionary benefits, particularly post retirement pension increases or early retirement.
- The company and the Trustees need to consider which of these benefits reasonably should be included in the calculation, taking account of the overall funding position of the scheme and the members potential rights to the benefits
- Need to decide the right balance between honouring expectations without compromising the position of other beneficiaries of the scheme.
- Depending on the assumptions used to determine the additional sum and depending on what benefits are target the outcome will be different overall package of benefits to some categories of member.
- The actual members who elect the option may have a different profile from regular scheme beneficiaries.
- Factors such as different demographics are unlikely to make a significant impact relative to the financial assumptions so you can probably use the same assumptions used for funding the scheme.
- Factors will be subject to equal treatment between men and women
- Other factors such as salary increases may differ. Particularly for the part timers. The assumption should reflect that fact.
- But it is impossible to allow for individual personal expectations.
- Theoretically, the investment assumption could reflect the period to retirement and the individual's appetite for risk.
- In practice a common rate will probably be used.
- If a market related basis is used, we need to consider the appropriate investment medium (equities, reflecting long term expectations or bonds reflecting guaranteed returns). The company needs to strike an appropriate balance.
- Need to decide whether you reflect the additional tax or National Insurance payable (i.e. cost to the employer or benefits to the employee).
- Could use a market related calculation each time the member elects or it may be easier to publish a scale possibly age related in advance.
- Which would be subject to periodic review when assumptions change.

Practical problems

- The option will cause administration problems.
- Particularly for part timers if they change their number of hours worked during the year.
- Suggest the choice is at most annual and possibly less frequently.
- Those who trade down will also trade down their spouses benefits.
- Consider making the choice relate only to members benefit (i.e. spouses benefit unchanged).

- Or require spouses consent. In practice this may prove difficult as the benefit is payable to a dependant and the definition could be wide ranging.

This question produced a wide range of answers and was a good differientor in deciding borderline cases. The better candidates used the structure set out in the question and it was pleasing to see some serious attempts at drafting. The discussion on advantages and disadvantages was generally good, although many did not appreciate that it was important to understand the company's objective when considering the proposal (for example, if the company wished to encourage pension provision for part-timers, then an increase in cost is not necessarily a disadvantage). The discussion on target benefits and assumptions was generally weak.

5 (i) Basis is set out in GN27

Assume active members had opted to leave the scheme immediately before the effective date of valuation.

Define either

- *MFR pension age* (or similar) as the date when ...
- *switch-over period* as 10 years ended when ...

a member will first become entitled to receive his/her full benefit entitlement on retirement without reduction to take account of its payment before a later age.

Non-pensioners should be assumed to retire at MFR pension age/end of switchover period.

Unfettered options on retirement should be assumed to be exercised to the maximum allowable degree if this would increase the amount of the scheme's liabilities.

For pensioners, the liability is insured and therefore may be disregarded.

For non-pensioners, the liability should be calculated as the present value of the accrued benefits using the assumptions below ...

... multiplied by $(1 + 0.005n)$ where n is the number of years before MFR pension age (with a maximum of 10) and ...

$MVAEq \times n/10 + MVAGilt \times (10 - n)/10$

where:

> $MVAEq$ = 3.25% ÷ (net dividend yield on the FT-SE Actuaries All-Share Index)
>
> $MVAGilt$ = value at the annualised yield on the FT-Actuaries Fixed Interest 15 year Medium Coupon Index or the FT-Actuaries Index-linked Over 5 years (5% inflation) Index, as appropriate, of a 15 year stock with coupon equal to the relevant long-term assumption, whichever produces the lower value.

Rate of inflation = 4% p.a.

Effective rate of return on gilts = 8% p.a.

Effective rate of return on equities = 9% p.a.

Rate of statutory revaluation for deferred benefits = 4% p.a.

Rate of pension increases in payment = 3½% p.a.

Mortality: PA90 rated down 2 years

Proportions married: 80% (men) or 70% (women) at MFR pension age

Husbands older than wives by +3 years

Expenses allowed for should be 4% (because it is small) of the value of accrued liabilities

(ii) A cash equivalent is based on the Scheme Actuary's judgement (MFR is prescribed) ...

subject to a minimum of the MFR value ...

excluding the GN27 4% winding up expense allowance

Options need be accounted for only on the basis of the assumed probability of deferred pensioners generally exercising the option. (MFR requires the actuary to assume options against the scheme will be exercised.)

Actual marital information can be used. (MFR dictates a proportion married and assumed age difference approach.)

Transfer out after a transfer in may need special treatment to ensure it is equitable. (No provision under the MFR for special treatment of transfers in.)

(iii) GN11 states that "a cash equivalent should represent the actuarial value of the benefits which would otherwise have been preserved. Such actuarial value should represent the expected cost within the scheme of providing such benefits and should be assessed having regard to market rates of return on equities, gilts or other assets as appropriate".

Should address:

- what "expected cost within the scheme" means (e.g. approximate buy-out cost, economic cost to company of providing the deferred benefit, expected cost on the basis of the scheme's current or "matching" assets)

- whether and why there should or shouldn't be an allowance for the expected out-performance of equities compared with risk free investments

- whether and why there should or shouldn't be an explicit or implicit allowance for scheme expenses and/or members expenses (e.g. buy-out contract or personal pension)

- how and why changes in market conditions would be taken into account (including, if appropriate, an explanation of any adjustment for proximity to retirement)

(iv) Advantages of using MFR basis to fund scheme:

- Lower costs (reduces number of valuation bases)

- This may well be the minimum the company has to pay anyway (depending on the rules of the scheme) so avoid confusion of a conflicting basis

- The basis's objective

Disadvantages of using MFR basis to fund scheme

- If the scheme is going to continue in the long term then the MFR contribution rate (if the theory works) will rise over time

- Members would have greater security if the scheme were funded above the MFR

- MFR is not a suitable actuarial method under SSAP 24 so another set of figures will always be required (unless the difference is regarded as immaterial)

- The company may want a cushion against unexpected cash calls if MFR solvency falls below 90%

  because you as an actuary disagree materially with the MFR method/basis

  because although the MFR may give a reasonable answer now, it may set a precedent which the trustees or company don't want to follow in the future

  because the cost of buying out annuities may be higher than the cost of retirement benefits implied by the MFR (if the trustees want to be sure of meeting liabilities by buying them out on winding up)

- Funding at the MFR level will lend volatility in both the funding leven and contribution requirements.

- The MFR market value adjustment factors are very crude e.g. because

  they only allow for investment in the FTSE All-Share i.e. UK equities but most scheme invest overseas and ...

  they don't take changes in UK corporate dividend policy into account until revised by the Government

Part (i) was well answered. In Part (ii), candidates concentrated on listing assumptions/methods rather than comparing these and, therefore, scored poorly. Part (iv) was a topical issue and it was surprising that more points were not made. In general, candidates concentrated on disadvantages.

6 (i) Listed below are the main headings. Each should be put in a rational context; i.e. a "reason" is given.

What earnings are included
What price index to be used
Spouse's pension
Children's pension
Who is eligible for survivorship pensions
Retirement age (SPA)
Benefits payable on early retirement (if any)
Benefits payable on late retirement
Pension increases in payment
Disability pensions
Guarantee period
Frequency of payment
Date of payment (e.g. 1st of month)
Whether ceases on remarriage
Benefits on leaving contracted out employment

Increases after leaving c/o employment
Commutation of pension

(ii) Need to ensure that there is adequate funding
of contracted out schemes

Subject to financial supervision
and actuarial certification that liabilities covered
possibly on prescribed basis

Set out a priority order for contracted-out benefits on a wind-up

Requirement for scheme to have adequate contributions
Could require c/o schemes to provide minimum level of benefits —
"quality" test

Avoid selection by employer
All members of scheme must c/o
Appropriate terms and continued supervision on ceasing to c/o

If individual contracts-out should do so for a minimum period of time.

Potential investment restrictions
e.g. no self investment

Rebate subject to review
Possible consideration of a Central Solvency fund but this raises
significant other issues.

(iii) Buy back terms calculated on appropriate actuarial assumptions
these should be consistent with those underlying the contracting-out
rebate

Should be market adjusted although care needs to be taken to ensure
that an escape route is not given to schemes just because of low market
values
The terms will need to be reviewed (probably at the same time as the
rebate)
— as the premium will have been priced to some extent on the
historical position which they need to be revised

Schemes should not be permitted to give up c/o status temporarily
to obtain a financial advantage

Terms should be set so that the terms are reasonable for schemes in
genuine need
but not so advantageous that the possible financial advantage
outweighs the wider implications for an employer of contracting back in

There was some evidence of time pressure and many solutions were relatively brief. In Part (i), candidates generally gave a comprehensive list of information but the reasons consisted of general statements.

In Part (ii) answers were brief and, therefore, marks low. This was surprising as a basic understanding of UK contracting-out would give a steer to most of the points available.

In Part (iii), good candidates scored well by generalising what they knew about the UK.