EXAMINERS' REPORT

June 2018 examinations

Subject F104 — *Pension and Other Benefits* Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principal 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.

QUESTION 1

i.

- Legislation
- Tax
- Recruiting and retaining staff
- Incentives
- Managing employee retirement
- Controlling externalities
- Reducing costs
- Eliminating adverse selection and asymmetric information.

[4]

ii.

Risk to employees

Employees may choose the cheapest option to increase their take home pay
And less financially educated members may make poor investment choices
This could lead to inadequate savings at retirement.
The cost of administration may increase to keep track of different member choices resulting in lower contributions towards retirement funding.
Members may choose death and disability benefits that are a poor match to their circumstances and/or may not be proactive in updating choices as their circumstances change.
Choosing the cheapest medical cover provider and option may mean inadequate cover
Giving up leave days could lead to burn-out and other health issues
Which may increase the need for medical and disability cover
Options around death and disability benefits opens the pool up to adverse selection
The cost of risk benefits may be higher than if all members were compelled to have the same level of benefit

Risk to employers

The type of design may attract staff members who are looking to maximise take-home pay without putting in extra effort.
Employees with insufficient medical cover may have higher levels of absenteeism
If they are unable to access quality healthcare.
Employees that forgo leave days may be less productive overall
For example not taking enough leave may result in tired and unproductive employees.
Employees who forgo vacation leave may take relatively more sick leave
Employees who become burnt out due to insufficient vacation leave may have long periods of sick leave or successful disability claims.
The employer will incur costs in having to replace and train new employees more often as a result.
Employees that retire with insufficient savings may blame the employer for poor outcomes.
More time will have to be spent on managing the retirement fund
And managing employees in general where so many options are available
This will lead to increased costs for the employer.
Employees may not feel comfortable making all the choices and may pass this responsibility on to the employer
The employer could then face blame for any poor outcomes
Or may incur costs of having to provide advice.
[9]

Examiner's comments:
Very well answered. The first part was bookwork and candidates knew it. The second part had a lot of available marks, but candidates generally were able to think of a good range and the performance was good.

QUESTION 2

i.

Start with the accumulated member values per member from one year ago.
Add a year’s worth of interest to the opening value.
Check how risk and admin expenses are dealt with
If paid from a reserve account then ignore in liability build up
If paid from contributions then determine net contribution per month per member
Accumulate monthly contributions with appropriate monthly interest
Add the total accumulated contributions for the year to the starting values plus interest.
Add or subtract any distributions that may have occurred during the past year.
Benefits that have been paid can be removed from the liabilities
Check that the benefit paid is a reasonable match to the benefit build up
Check for items such as reinsurance proceeds that should have been paid or allocated
Allocate interest as appropriate between date of exit and date of payment
Where benefit has not been paid yet this should be included as part of the total liability
[5]

ii.

Fund returns not allocated correctly i.e under allocated
Or not allocated often enough
Contributions earmarked for expenses higher than charges
And is not distributed
Reinsurance proceeds not allocated appropriately
No change in assets in respect of benefits that are recorded as having been paid
[2]

Examiner’s comments:
This question was reasonably well answered – good candidates described how to roll up valuation results, poor candidates got lost in the process and could not focus on the build up enough.

QUESTION 3

- Claims risk
  - Risk of claim incidence and severity being higher than anticipated.
  - May be exacerbated by moral hazard
  - Can put maximum duration on benefits to limit severity
  - May limit the number of times a person is able to claim in a given period to limit claims incidence risk.
- Funding risk
  - Risk that any available surpluses are eliminated during a downturn
  - Which would ordinarily mean that either contributions would need to increase or benefits decrease
  - Which would be politically unpopular
  - To mitigate, allow the fund to borrow;
  - Or to build up large surpluses when unemployment rates are lower.
  - To the extent that there are any cross-subsidies between different groups, a change in the composition of the employed population may create a funding risk e.g.
  - If low-income earners are cross-subsidized by high income earners
- Investment risk
  - If the fund has large surpluses these will need to be invested and investment returns may be lower than anticipated
  - Or the fund may face liquidity risk
  - This may be mitigated through careful choice of investment strategy
  - (And matching assets and liabilities) by currency, nature, term and amount
- Political risk
  - Wherever there is a large surplus, there may be political temptation to use it for other purposes
  - And on the other hand, the benefit design may be altered to gain political support at the expense of the long-term viability of the benefit scheme.
  - Mitigate by having strong governance structures to ensure fund is governed in accordance with its agreed scope and mandate.
- Data risk
  - Being a state scheme, direct knowledge of contributors is often not known before claim stage.
  - This makes it more difficult to assess claim risk directly and understand funding risk.
  - Collecting data from other sources e.g. revenue services, where legally permitted, can assist in understanding exposure.
  - Poor claims data may make understanding claims in payment more difficult leading to funding risk.
  - Can have protocols around data capturing and checking to assist with data integrity.
- Counter-party risk
  - Counter-parties such as service providers and investment counter-parties may default
  - Good governance (due diligence) can assist in selecting appropriate counter-parties
  - Checks may include credit-rating checks
- Expense may be higher than anticipated
  - Possibly due to inflation
  - Or just poor cost containment
  - Given that this is a state scheme, there should be economies of scale (large fund)
  - And negotiating power to contain costs
- Inflation risk to the extent that any benefits can be adjusted in inflationary terms

    - Mitigate by capping increases
    - or not providing for any inflationary adjustments
- Operational risks
    - e.g. fraud, general mismanagement
    - Good governance should involve identifying and mitigating these operational risks
    - e.g. having HR policies to deal with employees behaving fraudulently
- Regulatory risk to the extent any employment regulation influences the unemployment rate
    - Ensure that the unemployment scheme is treated as a stakeholder and consulted with regulatory changes

[12]

Examiner's comments:
This question did not have a lot of marks allocated to it – because candidates were limited to only 6 risks, there were actually only 12 (or fewer) marks available depending on the risks they thought of. As a result performance was not great. In principle this was not a difficult question though.

QUESTION 4

Insufficient data
- Generally, there are many short-duration disability claims and fewer longer-duration claims.
- There is currently little incentive for a claimant to inform the scheme during the early days of their inability to work. Hence the scheme will have very little data on which to assess expected claim volumes.
- Even if data were available, the proposal would involve paying basic benefits to claims that are ultimately rejected…
- Hence there is likely to be an increase in the claims rate due to moral hazard.
- The larger the flat-rate benefit relative to worker's earnings, the greater the extent of the moral hazard.

Morbidity risks
- Although with early reporting, one hopes to return disabled workers to the workplace quicker…
- …the basic benefit may discourage workers from going back to work, resulting in longer periods of disability and hence higher costs
- The additional administrative burden on claims assessors dealing with the additional applications…
- … may mean that more serious claims do not receive enough attention and having a longer duration than what may currently be the case.

Financing risk
- The cost of paying the basic benefit, the potential for increased costs of the earning-related benefit and the additional administration costs will all increase the cost of the scheme.
- Contributions into the scheme may also decrease if during the waiting period employers do not keep disabled workers on the payroll.
- There might be a working balance to help smooth cashflows…
- … but ultimately contribution rates may need to rise or benefit levels fall
- Given the lack of data, these adjustments may need to be made numerous times which might result in the scheme becoming unpopular with workers and their employers…
- …and administrative errors being made with respect to payment of contributions and benefits due to frequent changes.

[7]

Examiner's comments:
This question depended on the candidates understanding how the new benefit would work. The insight required beyond the first 2 marks was often not there.

QUESTION 5

i

An AOS enables the actuary to:

Make a semi-independent check on the valuation results by reconciling the current and previous valuations.

Recognise the reasons for any unexpected development of the funding position (for example, a large unanticipated strain) and consider the likelihood of future repetition of such results.

Recognise the potential financial significance of the assumptions chosen for the valuation (and the financial stability of the funding method chosen). This may trigger an experience investigation.

It is also often a regulatory and professional requirement for the valuation report to include an analysis of the factors leading to the change in the financial position.

[3]

ii.

$$CUAL_0 = 150m = \frac{P_0 * S_0}{A} * \left(\frac{1}{1+i}\right)^{R-x_0} * a_R \surd\surd$$

$$CUAL_1 = \frac{P_1 * S_1}{A} * \left(\frac{1}{1+i}\right)^{R-x_1} * a_R$$

$$CUAL_1 = CUAL_o * \frac{P_1}{P_0} * \frac{S_1}{S_0} * \left(\frac{1}{1+i}\right)^{x_0-x_1} = 150 * \frac{5.3}{4.5} * \frac{360 * 180}{350 * 150} * \left(\frac{1}{1.04}\right)^{38-37}$$
$$= 209.67m$$

[2]

iii.

$$PUAL = \frac{(P_1 * S_1)}{A} * \frac{1+e}{1+i}^{R-x_1} * a_R = CUAL_1 * (1+e)^{R-x_1} = 200m * (1.02)^{28}$$
$$= 348.20m$$

Therefore the change in basis results in a loss√ of 348.20 – 200 = 148.20 million

[2]

iv.

Interest on Surplus: This is the actual interest earned on the surplus in the fund at the start of the period. In this case, R110m earned R9.2m in interest, suggesting that interest over the period was approximately 8.3%.

Investment performance: This is the amount earned by the assets of the fund in excess of the assumed investment return. We would expect assets to have earned 8.3%-4% = 4.3% more than expected. Assets at the start of the period were R260m, so they would have earned 11.8m at this rate – the remainder could to be from interest on other cashflows into and out of the fund.

Withdrawals: there is a withdrawal profit, which implies that withdrawals were either lower than assumed (and withdrawals generated a loss for the fund) or higher than assumed (and generated a loss for the fund).

[3]

Examiner's comments:

This question was quite well done, with most candidates being able to do the bookwork and the calculations quite well.

QUESTION 6

i.
Answer:
- This is a financing method called lump sum in advance
- The entire amount of benefit is set aside the moment the potential liability arises, i.e. when the worker joins the company (or when the regulation is introduced)
- This method may have been recommended because it is very secure.
- This is particularly relevant since the company may have to retrench workers because it is in financial difficulties, so having the funding available will make it much more likely the benefit is paid.
- This will also ensure that even when the company is closing down all workers can receive the benefit.
- The benefit is relatively small so funding it in advance should be not too difficult

[2]

ii.
Answer:

The potential financing methods are book reserving, regular contributions, and PAYG=Terminal=Just-In-Time funding

Book Reserving
- Book reserving is not a funding method, but it allows for the company to create an accounting reserve on its balance sheet which reflects the liability.
- This would be less secure than the suggested LS in advance
- However, this may be easier on companies in that there is no cash to lay out immediately; this may save some companies from financial difficulties as a result of the regulation

Regular Contributions
- This involves paying contributions over time
- It is not suitable as the benefit does not accrue slowly over time but the full liability exists immediately

PAYG = Terminal = Just in time
- These 3 methods are effectively the same in this case
- The amount would be set aside as the event occurs
- I.e. there would not be any pre-funding and the benefit would not be secured at all. This would help the companies but may increase risk to the workers

[5]

iii.
- Effect on company performance:
    - The regulation requires companies to set aside 1/12th of annual payroll as a reserve. This may be detrimental to small companies especially if they are already in difficulties
    - This may have the opposite effect of increasing retrenchments and company closures as financial problems are exacerbated
    - This may slow down economic growth and increase unemployment
- Complacency about retrenchments
    - Having a retrenchment fund may actually encourage retrenchments
    - The money is already out of reach of the employer, so there is no additional cost associated with retrenchments
- Is 1 month sufficient?
    - One month of salary may not be sufficient to allay the financial distress caused by being retrenched

- So the intervention may not succeed at protecting workers from the financial consequences of being retrenched

- Funds locked up in investments
    - This will reduce consumption and increase overall investment levels in the country
    - This may have an effect of slightly slowing the economy

[4]

iv.

On the whole, if the government's goal is to protect workers from the financial consequences of being retrenched, the most effective strategy would be to try and reduce retrenchments

- This could be done by making retrenchment legislatively more difficult
- Or by encouraging financial growth and helping small and medium companies, eg. Through tax breaks.
- Create a scheme to cover the benefits which is funded by a levy on all companies
- Government could fund this benefit

[2]

Examiner's comments:
Part (i) was reasonably well answered but too generic in most cases. Candidates failed to supply a reason why this type of funding has been suggested.

Part (ii) also reasonably well answered but not tailored to answer the question, rather a repeat of the bookwork definitions. Effectiveness of each method not well identified by candidates.

Part (iii) was higher order. Answers varied but essential points were missed by most candidates.

Part (iv) poorly answered. Candidates failed to recognise that preventing retrenchment was an option.

QUESTION 7

i.

- Risk that the final bonus declared is greater than investment return earned
  - May be due to operational error e.g. administrator loading on the incorrect rate
  - or a model error on the part of the trustees or their advisor
  - Would reduce solvency (unless there is an investment reserve to fund the strain from)
- Risk that interim bonus is greater than investment return earned
  - Investment returns are extremely difficult to predict
  - May lead to a strain
  - Particularly since staff turnover is high.
- Risk that interim and final bonuses are lower than investment return earned
  - Results in surplus building up within the fund
  - May result in reputational risk if it is not returned to members in some way
  - Any delay in distribution leads to inter-generational transfers of this surplus which may be regarded as unfair.
- Reputational risk arising from volatile investment returns
  - Because trustees declare the bonus members may assume the trustees have greater responsibility for volatile or poor investment performance
  - The infrequency of bonus declarations means that bonuses may change significantly from period to period
  - The timing of the bonus declaration may result in two members who had exited on the same day having their exits processed on different days resulting in different bonuses being applied.
  - Members are likely to regard this as unfair and arbitrary.
- Other operational risks include the bonus being declared late resulting in exposure to the interim rate for longer than anticipated.
- Higher potential costs involved due to the need for an expert to calculate the rates each month. (S)

[4] (max 1 mark per risk)

ii.

- Will investment choice be offered?
- Will it be possible to change to a more regular method of allocating returns e.g. daily allocation

Appropriate

- Should be made with reference to the needs of the members
- e.g. desired RR in retirement and required rate of investment return given other fund characteristics
  - contribution rate
  - age of the membership / expected term to retirement
  - size of fund credit relative to salary
- The ability of members to bear investment risk
- Members are likely to be financially unsophisticated, and hence this ability may be low
- Also may have limited other resources available and hence fund may be particularly risk averse when it comes to this fund.
- Moving to daily pricing means fund values change daily which members may be uncomfortable with.This suggests a low return-low volatility strategy may be adopted.
- Given this risk aversion, the trustees may give the manager of the default very limited scope to deviate from their mandate
- Although greater scope for deviation may be given on the choice portfolios (if any).

- Given high staff turnover, may want a low volatility default to avoid volatile withdrawal benefits
- How the members use their retirement lump sums may suggest a particular investment style
- e.g. lifestaging if most members take their retirement benefits as annuities

- Cost-effectiveness,
- Particularly as this is a large fund there should be scope to negotiate fees.

- Legal form of each investment should be appropriate given the fund's ability to manage its own investments…
- …as well as any tax incentives and regulatory constraints

- Investment style of each investment
- Particularly noting the impact on expected return net of cost

- Need to consider current investment strategy
    - Costs of transitioning to a new strategy
    - Locking in historic losses

- Other points (max 1 mark here unless a point is well substantiated)
    - Freedom investment managers have to deviate from their mandate
    - Appointment of custodians, brokers and investment consultants
    - Choice of investment manager
    - Bequest motive
    - Default option if investment choice is introduced

[8]

Examiner's comments:
Both parts (i) and (ii) were poorly answered. Candidates didn't think through the risks that are introduced when there is a prediction of returns being made at any point within a fund. In part (ii) most students got the generic points but were unable to think through factors that would come up in this type of a fund i.e. low sophistication and high turnover.

QUESTION 8

i.

- Retirement income provision
    - Ensures that there is not a significant drop in income at the end of a career
- Death benefit provision
    - Ensures that a financial void is prevented on the death of a breadwinner
- Disability benefit provision
    - Ensures that there is not a significant drop in income due to illness or disability prior to retirement.
- Redundancy (withdrawal benefit)
    - Ensures that there is access to savings when unexpectedly unemployed.

[3]

ii.

Advantages

- Compulsory annuitisation may have led to reduced competition amongst annuity providers
- And retiring members would be subject to the vagaries of the annuity market
- As well as profit margins and expense loadings used by insurers
- These issues may have caused annuities to be relatively expensive
- And resulted in an unexpected drop in income after retiring.
- Allowing choice of product might drive competition amongst annuity providers
- Which allows for a smoother transition to retirement as pensions increase as a result.
- Retirees who invest in income draw down products can control the level of income they withdraw
- Which lends itself to true consumption smoothing during early retirement.
- On early death, income drawdown products are likely to allow for a bequest to dependents.
- This may better meet the needs of retirees who have young families that would require consumption smoothing in the event of their death.
- Income drawdown products facilitate variable income if necessary
- For example during periods of illness more income can be drawn to cover unexpected expenses.
- In earlier years, higher drawdown rates can facilitate quick repayment of debt
- Reducing the unpredictability of future expenditure patterns.
- Possibility of riskier investment holdings and higher returns
- therefore higher pension in the income drawdown product
- Members may still be able to purchase an annuity later on with an income drawdown product

Disadvantages

- Future income levels available from an income drawdown product are not guaranteed and may fluctuate
- Depending on the performance of the underlying investments,
- Drawdown limitations imposed by regulation,
- And discipline exercised in drawing an income in early years when most capital is available.
- If retirees live longer than expected they are likely to experience a drop in income in later years
- When they reach a point at which the capital they are drawing from has been eroded
- Consumption smoothing is further disrupted in these years since they are likely to have the highest medical expense levels.
- ✓ Retirees might find that they have saved too much due to the fear of running out of money that is associated with drawdown products

- They may feel that the money could have been better used in pre-retirement years instead.
- As the pool of annuitants reduces in size prices of annuities may rise to defend the risks associated with smaller pools.
- Retirees who seek a guaranteed income might find this expensive i.e. there is a sudden drop in income at retirement
- Or future increases are lower than inflation leading to a drop in real income.
- Drawdown products increase the need for advice which increases costs experienced during retirement

[12]

Examiner's comments
Part (i) was well answered by all candidates – to be expected since this was a pure bookwork question
Part (ii) had some good attempts. In general candidates didn't write enough and didn't establish enough different points (lots of unintended repetition).

QUESTION 9

i.

- The capacity of the economy to afford various benefits
- And the economic consequences of different choices
- The needs of its population
- The capacity of the state to perform various tasks
- The incentives that benefit provision gives to change individual behaviour, and
- the macroeconomic and microeconomic consequences of these.
- The efficiency of different modes of provision.

[3]

ii.

The basic pension: Pillar 0

The state earnings related pension: Pillar 1

Employer-provision: Pillar 3 because it is voluntary

Family Support: Pillar 4

[2]

iii.

- Redistribution: This may be a key aim of the state. The basic pension will be strongly redistributitive and the state earnings related pension may be less so. However, the employer-provision is unlikely to involve any redistribution.
- Market failures such as:
    - Behavioural biases such as myopia. Because the employer-provision is voluntary workers may not join it even if it is their best interests
    - Externalities: The state may be concerned about the impact on younger families of older adults not having sufficient income.
    - Assymetric information and imperfect competition: The state may be concerned that the employer-provision may be expensive and consumers may not fully appreciate the risks that they are taking on.
- Efficiency: The state may feel it is more efficient than the private sector.
- for example through economies of scale achieved at a macro level
- Inertia: These benefits may have been provided for some time and removing them would be unpopular.
- External pressure may have been placed on the country by doors for example.

[6]

Examiner's report:
Part (i) and (ii) were well answered in general. A good attempt was made in part (iii) but candidates failed to complete the points they made in many cases.

END OF EXAMINERS' REPORT