EXAMINERS' REPORT

June 2020 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)

- The theory behind the AAM is to produce a stable contribution rate over the “active” lifetime of a member.
- The cost of each year’s accrual of benefit increases with age (because the period of discount to retirement decreases).
- This means that, over the whole lifetime, contributions are overpaid in the earlier years of membership,
- which balances the underpayment in the later years
- However, if the AASCR is recalculated at each valuation, we will always find that AASCR > PUSCR.
- As the fund is closed, the average age will increase at every valuation
- Hence both the AASCR and PUSCR will increase

ii)

Advantages

- Annuities are purchased in the name of the fund
- So longevity risk,
- investment risk,
- pensioner expense risk are all passed to the insurer

Disadvantages

- If the insurer defaults then the insurer remains liable for the payment of the benefit
- Lose control over increases to pensioners
- May not be able to find an annuity that exactly matches benefit promise
- Likely to be more expensive due to profit loading
- Will crystalise any expected losses at purchase stage
- May require increased liquidity to purchase annuities which
- May reduce returns

Part i was not as well done as it should have been as it is a very standard question. Part ii was better done.

QUESTION 2

i)

- Redistribution
- Market failures
- Efficiency
- Inertia
- External pressure
- Moral hazard and vested interests

ii)

- A "mushroom-shaped" population pyramid is a Contracting Population Pyramid
- and marks the end (or final step) of the demographic transition. It is characterised by low-fertility and low-mortality.
- This means that there is a shrinking child/young population (due to the low fertility)
- and a growing old age population (due to low mortality) and hence increased longevity.
- This means that the old age dependency ratio will be increasing
- since the dependent population living longer and there is a smaller working population to support it.
- This is a sign of a developed country and generally means that the net population growth is negative i.e. the population is contracting.

- A mushroom-shaped population pyramid is formally known as a contracting population pyramid
- The population pyramid is called contracting because there are relatively fewer younger adults
- Than middle-aged adults
- And the population continues to decline from young adulthood into childhood
- Eventually there is some stabilisation at younger ages which look reasonably constant
- Implying that the number of new births each year
- Is equal to or less than 50% of the number of child bearing adults
  i.e. 1 child or less per couple.

iii)

- If the virus is allowed to continue to spread
  - There are likely to be many child deaths
  - Which may reduce the claim on the state for child benefits

- However, there will be higher claims for death benefits than usual
  - At all ages
  - Any gains made by paying reduced child benefits
  - Will be lost by additional death benefit claims

- If claims are made on the state benefits
- If death and disability benefits are insured in private schemes
- The insurers are likely to increase the premiums if the epidemic persists
- Negatively impacting other forms of saving e.g. retirement savings.

- In the process there will be significant strain caused on the healthcare system
  - The state is likely to face significant strain in attempting to meet the demands
  - For hospital equipment, medication etc.
  - Employers may face reputational issues
  - If they do not support medical insurance where health care is privately managed.
  - Especially in the case of families with young children.

- Employers may face more costs in the form of absenteeism
  - And reduced productivity if employees continue to work whilst they are sick.
  - This could be exacerbated if employees stay at home to look after ailing children
  - Even if they are not sick.
  - Or leave their jobs completely if their children are permanently affected
  - Which introduces recruitment and training costs

- In later years the impact of the aging population structure will be exacerbated
  - Due to a potentially significant loss of life at younger ages
  - Leading to a reduced level of tax payers 10 to 20 years on from the epidemic.
  - The government will experience difficulty in managing the old-age benefit costs
  - Since they are funded on a pay-as-you-go basis.

Part i was generally well done as was part ii. There were plenty of marks available in part iii and prepared candidates did well. Many candidates fixated on the COVID-19 pandemic even though the disease described affected mainly children and was not described as novel.

QUESTION 3

i) a)

- In a DC fund, this is the accumulation of
- The invested contributions
- With fund returns
- Net of all deductions

b)

- The ratio of income
- In the year immediately following retirement
- To income in the year preceding retirement.
- It must be calculated consistently with pre-retirement income.

ii)

- A member's accumulated fund credit can be seen as the present value of the capital available to purchase an income at retirement.
- The level of income received upon retirement will directly impact the income replacement ratio
- In years before retirement, the calculating the income replacement ratio includes a series of assumptions
- The actual income replacement ratio at retirement will depend on how actual experience compares to the assumptions.
- Therefore at any given point in time (assuming all else equal)
- A lower accumulated fund credit translates into
- A lower income replacement ratio.

iii)

- The calculated IRR will be based on a series of assumptions with respect to the benefit design.
- The actual IRR achieved will depend on the choices made by the members in the time leading up to retirement.
- It is not clear whether members are locked into a contribution rate or if they can update the rate over time
- In the latter case, members may increase their contribution rates closer to retirement date
- Since they are likely to have reduced debt and higher disposable income levels
- If the IRR is calculated using the current contribution rate, increasing the rate closer to retirement should improve the outcome.
- Members may also increase contribution rates at salary increase dates
- This should help to stabilise the IRR projection.
- Member have investment choice which primarily impacts the return that can be expected to be earned on the invested amount.
- Investment choice complicates the IRR modelling

- Because it is not possible to develop a stochastic model on a per member basis
- However, having a stochastic model based on a single investment strategy
- May be very accurate for some members and very inaccurate for others.
- Further complications will be caused by the expenses involved in
- Different strategies and changing strategies.
- Members can choose the benefit level paid to their beneficiaries on death
- A higher benefit will translate into a higher insurance premium
- Although the cost will depend on age, gender and possibly other factors.
- Younger members should most likely have higher cover
- In which case the higher cost could be offset by investment returns
    - if their cover reduces closer to retirement
    - which should improve the IRR.
- Any portion of the accumulated fund credit that is commuted at retirement will result in an immediate reduction in IRR.
- How the actual IRR compares with the calculated IRR will depend on how the assumed commutation percentage
- Compares to the actual commutation at retirement.
- Most people commute the maximum allowable amount
- If a proportion lower than 50% is built into the IRR calculation
- The actual IRR will be lower (all else equal).
- Annuity choice may be far off for some members and assumptions will be needed regarding
- The proportion of joint-life compared to single-life annuities that will be selected.
- Where joint life annuities are more expensive (all else equal)
- The extent of increases built into the annuity rates
- Will impact the cost of annuity and level of IRR
- Especially if the increases are guaranteed in some way.
- If members elect drawdown products instead of conventional annuities
- They effectively choose their IRR.

Part (i) was bookwork. In general candidates seemed to know the definitions, however full marks was rarely achieved.
For part (ii) candidates that followed a logical approach did well. Most answers were vague and not enough to achieve a high mark.
Part (iii) was well done in general. All candidates understood the impact of flexible benefits on preparing replacement ratios that require a large number of assumptions up front.

QUESTION 4

i)

- Overarching principle is to have the highest chance of being able to meet benefit obligations
    - With the lowest possible level of risk
- The strategy should consider the term and nature of the liabilities
    - Which is most likely to be long-term
    - And real in nature in a defined benefit fund.
- The level of assets available
    - And the funding level should be considered
    - These will dictate the risk appetite to an extent
    - (For example, more risk averse is funding level is close to required level)
    - And whether pooled or segregated assets should be incorporated
- The strength of the sponsor convenant should be considered
    - If the sponsor covenant is weak this may lead to more risk aversion in the investment strategy
- The costs involved in the management of the strategy
    - And any movements into and out of assets should be considered
    - Lower cost strategies are likely to be considered more appropriate
- Legislation may limit the type of assets
    - And the level of assets that can be invested in certain
    - Asset classes
    - And types of investment within asset classes
- Tax implications should be considered
    - For example income versus capital gains tax applications
    - May lead to a skewness towards a certain type of investment.
- An ALM can be used to determine the most appropriate strategy.

ii)

- After the conversion has taken place the investment strategy should reflect the principles as set out in the investment policy statement
    - A DC fund is likely to follow a more aggressive approach than a DB fund
    - Since a benefit is not defined in advance
    - And does not need to be met at some later date
    - And particularly if the average age of members is low
    - And they have time to make up losses caused by volatile returns
    - A DC fund could have a pooled investment strategy as well
    - That reflects the risk appetite and needs of the average member
    - DC schemes have more flexibility to match individual needs
    - One may see age-profiling in the investments
    - For example a higher proportion in bonds and cash closer to retirement
    - Or individual investment choice.

iii)

Advantages of cash strategy

- Promotes capital preservation
  - Which is essential to ensure members do not become worse of
  - Once their DB capital values have been communicated to them
  - But before the conversion has been fully finalised.
- Cash is the most liquid of assets
  - Any benefits that need to be paid during the transition period
  - Will not require disinvestment from the market
  - And can probably occur more quickly as a result
  - And benefits paid should be very similar to capital conversion values communicated
- Reduces the level of operational risk
  - Because all members are invested in the same way
  - And the impact of mismatching is greatly reduced
  - Since cash is the least volatile of all investments.
  - When the conversion is finalised the return allocation to DC values is easy to check.

Disadvantages of cash strategy

- Lower expected returns for the period
  - Which should not be too much of an issue
  - Unless the transition period drags on
  - Because of regulatory or other issues
- Costs involved in changing the strategy
  - Depending on the strategy prior to the conversion
  - It may be expensive to disinvest from the old strategy
  - Either because of transaction costs
  - Or because the market timing is bad i.e. depressed market values
  - Similar issues could be experienced when updating the strategy in the DC fund

This question was not well done overall. Part (i) was handled reasonably well but part (ii) seemed to cause a loss of momentum which could not be recovered in part (iii). Candidates failed to recognise that the investment in cash due to transition would be for a very short time period.

QUESTION 5

i)

Mandatory insurance options are covered in 7.2.5 of the notes and this really is a straightforward application of chapter 11 to a novel scenario.

- Security
    - regular contributions offers more security for members as the levies will be received earlier.
- Sustainability
    - – just-in-time levies may be extremely problematic as environmental factors that cause one pension fund to fail may affect other funds.
    - This would constrain their ability to pay the levies at that point
    - If the levies are risk-related, this would worsen the situation
    - And in particular, the fund that has failed may be completely unable to contribute.
- Stability
    - Regular contributions offer the option of more stable funding as there can be some smoothing of experience
    - However, this may depend on the actual method chosen
- Realism
    - For both funding methods, the levies could be flat or risk-related.
    - However, due to the factors listed under sustainability, just-in-time contributions may result in the most high-risk funds being unable to contribute.
    - Over-time, just-in-time contributions create inter-generational subsidies between members
    - which is unrealistic for funds
- Liquidity
    - Just-in-time contributions may place a large liquidity strain on a fund or employer
    - At an inopportune time that they cannot plan for
    - Regular contributions are better at spreading this liquidity burden
- Opportunity cost
    - Regular contributions would have a greater opportunity cost for the contributing funds as money is collected earlier than for just-in-time contributions
    - However, pension funds do not make profits in the same way as companies
- Accounting
    - Ultimately, this is an expense that will either be borne by members or the employer
    - If it will be borne by the employer then consistency with corporate accounting principles will be important.
    - On an individual fund level, member contributions could be adjusted for a regularly funded levy payment

    - If the rules allow
    - But allowing for a just-in-time levy is likely to be impossible due to the frequency of rule changes required.
- Flexibility
    - Just-in-time funding typically allows no flexibility for the funder whereas regular contributions might.

Does not earn credit:
Regulation – they are designing the regulation so obviously can make either work

Most candidates realised which part of the notes this came from and did reasonably well.

QUESTION 6

i)

- The financial statements will not be able to correctly indicate the liability and reserve levels
    - Because the fund liability will be understated
    - If contributions are being paid late or not being paid at all.
- There may be a regulatory requirement for the trustees to blow the whistle on employers that are not paying contributions or are paying contributions late
    - On a cash accounting basis there is no way to tell that employers are underpaying at any point in time.
- Member benefit statements are likely to reflect a liability based on contributions received
    - This could cause members to question where the contributions deducted from their salaries have gone to
    - In cases where the participating employer is delayed or not paying contributions at all.
- Benefit payments to members could be incorrect not only because their full contribution accrual has not been recognised
    - But also if they share in reserves on exit
    - In proportion to their fund liability
- If premiums are being paid towards insured risk benefits
    - Either some members will not be covered since their contributions are not being recognised
    - Or the total premium being paid for insurance is relatively high compared to the contributions being recognised
    - Which impacts the proportion of contributions being invested even in cases where the employer is paying fully and on time.
- Where contributions are being paid late or not at all, members can never catch up on return lost
    - Since there is no recognition of what should have been paid
    - And what return should have been allocated

ii)

- Investigating and report on the fund’s financial position on a regular basis.
- Analysing financial progress of the fund between valuation periods.
- Assessing the need for contingency reserves and recommending balances for those reserves.
- Analysing sources of surplus or strain in the fund.
- Making recommendations regarding the distribution of surpluses or deficits.
- Performing benefit projections for communication to members.
- Checking the accuracy of individual fund balances.
- Alignment of assets with liabilities.

iii)

- Tax penalties
    - Where an employer loses any preferential tax treatment if contribution payments are late
- Fines imposed on the employer
    - These could be based on a scale that increases with the lateness of contribution payments.
- Impose regulation that requires accrual accounting by retirement fund administrators
    - And require that any underfunding due to late payment of contributions be reflected in employer financial statements.
- Whistle blowing requirements on late payment
    - By professional bodies involved in the fund (e.g. Consultants, actuaries and accountants).
    - This will be effective only if there is some type of penalty imposed.

Part (i) was generally not well done. Candidates struggled to think through the implications of the situation described in the question.
Part (ii) was bookwork and was handled reasonably well.
Part (iii) was a logical question with lots of available marks and was well done on average.

QUESTION 7

i.

Behavioural incentives use principles of behavioural theory rather than financial incentives to encourage an outcome.

It is preferable because:

- It is typically cheaper
- It works better

Example: default options.

ii

- Overall savings may increase,
- Or remain the same if investments elsewhere decrease by the same amount.
- Or borrowing increases by the same amount
- Increased savings and reduced consumption imply that interest rates will fall.
- Lower interest rates mean that firms will substitute away from labour, towards capital,
- and lower overall consumption implies that firms may reduce their demand for labour even further.
- Wage rates,
- and hence labour supply, may fall.
- This, in turn, implies that total household income may fall,
- leading to reduced savings.

iii. (a)

- Employer may pick up much if not all of the contribution.
- Would favour a DB fund,
- Where employer contributions can be unlimited
- Would also favour the introduction of vesting scales (see c)

(b)

- It is common for member contribution limits to be fixed at these tax limits.
- However, this is not strictly necessary.
- And the tax limits may be a poor guide as to how much to save.
- Overall level of contributions likely to be affected by retirement age

(a and b)

- Unclear as to whether the portion of the contribution going to expenses and risk benefits is tax deductible
- May allocate towards entity that gets larger tax benefit
- Salary definition to be consistent with tax benefits

(c)

- Having someone remain as a member of the fund only a short time is quite expensive
- May need to consider how to recover this cost e.g. a withdrawal penalty or higher investment fees for paid-up members.
- Or use a vesting scale on the ER contributions (see b)
- (b) limits tax incentives for the wealthy
- So may not be able to have cross-subsidies from high earners to low.
- May want to have different member categories with different minimum contribution rates based on income
- As lower-income earners may find a high contribution unaffordable
- And higher income earners may find a low contribution rate inadequate
- Also may want to create benefit categories by duration to encourage people to remain in the fund.
- May limit ability to reverse paid-up status in order to limit costs
- May be able to recover initial expenses from investment fees on paid-up members.

Part i was moderately well done but most candidates only stated one advantage of a behavioural incentive. Part ii was not well done as most candidates fixated on the direct impact on savings instead of considering the capital and labour markets. Part iii was very badly done. None of the candidates considered the 3 proposals in turn and hence struggled to generate marks.

END OF EXAMINERS' REPORT