INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2021

Subject CP1 - Actuarial Practice
Core Practices
Paper Two

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Paul Nicholas
Chair of the Board of Examiners
July 2021

A. General comments on the *aims of this subject and how it is marked*

1. The aim of the Actuarial Practice subject is that upon successful completion, the candidate should understand strategic concepts in the management of the business activities of financial institutions and programmes, including the processes for management of the various types of risk faced, and be able to analyse the issues and formulate, justify and present plausible and appropriate solutions to business problems.

2. This subject examines applications in practical situations of the core actuarial techniques and concepts. To perform well in this subject requires good general business awareness and the ability to use common sense in the situations posed, as much as learning the content of the core reading. The candidates who perform best learn, understand and apply the principles rather than memorising the core reading.

3. The examiners set questions that look for candidates to apply the principles specific to the situation set out in the questions, having read the question carefully. Many candidates gain few marks by writing around the subject matter of the question in a more general fashion. Detailed specialist knowledge is not required and nor is very detailed development of particular points.

4. Good candidates demonstrate that they have used the planning time well to understand the breadth of the question and to structure their answer - this is a big advantage in making points clearly and without repetition. This also enables candidates to use the later parts of questions to generate ideas for answers to the earlier parts.

5. Time management is important so that candidates give answers to all questions that are roughly proportionate to the number of marks available.

6. The comments that follow the questions concentrate on areas where candidates could have improved their performance. Candidates approaching the subject for the first time are advised to use these points to aid their revision.

7. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. Comments on *candidate performance in this diet of the examination.*

Paper 2 scored lower than Paper 1 with the average scores being circa 5% different between the papers. Paper 2 was generally answered OK although candidates struggled with higher order skills questions with stronger candidates clearly structuring their answers in a coherent way giving evidence that they planned their answers.

C. Pass Mark

The Pass Mark for this exam was 55.
1,117 candidates presented themselves and 500 passed.

Solutions for Subject CP1 Paper 2 – April 2021

Q1
(i)
The main advisors that the company will need to consult would be:

- Actuary [½]
- Accountant [½]
- Investment managers to invest premium [½]
- Lawyer [½]
- Regulatory experts [½]
- Marketing experts [½]

Other advisors that may be useful for setting up the product could be:

- Specialists in running nursing homes [½]
- Government officials [½]
- Specialists in running funerals [½]
- Data Analysts and IT experts [½]
- Reinsurers [½]
- Independent financial advisers if they are going to be used to sell the product [½]

Marks available 6, maximum 3]

(ii)
The general commercial environment

- Is there a market for the product? [½]
- Are there sufficient number of potential customers with enough disposable income to afford the product? [1]
- Is one product covering all of the possible cover better than offering separate products? [½]
- Are there any lifestyle/trends that could impact its popularity – e.g. if there was a culture of family members providing the care then this might be needed? [1]
- The government is planning to cut funding further, by how much and how quickly [½]
- Or government could change and the funding cuts reversed [½]

<u>Competition</u>

- Currently limited competition but others may see the opportunity [½]
- Particularly what is the possible impact if the banks do launch [½]
- Do the banks have better opportunity to sell the business or does the insurance company have a good opportunity, they should have given the customer base they currently have in annuities and whole of life contracts. [1]

<u>Marketing</u>

- How will the product be marketed? [½]
- Will it focus on new customers or existing customers? [½]
- How will the product be sold/which sales channels will be used? [½]

Modelling/Profit Models

- Has the company got suitable modelling to value and create reserves for the business required? [½]
- If not, is there an easy way to access suitable models, either by building or by purchasing an off the shelf model? [1]

Admin System

- Product is different to its existing policies and therefore admin system is unlikely to be suitable for the new product. [½]
- How easy it to access new system – would it be better to outsource and if so, how could this be achieved? [1]

Regulation

- How will the product be regulated? [½]
- Is there any consideration required around what they can or can't offer? [½]
- Also relating to solvency, pricing and disclosure? [½]

Links with the Care Providers and Funeral Providers

- Will the payouts of the contract be required to be paid to policyholder or will they be paid to the parties offering the service? [½]
- If the latter will the insurance company only pay to parties that it signs off – if so, does this limit the cover that can be offered? [½]
- And how would they decide who they would use [½]

Capital

- What are the capital requirements for the product? [½]
- Can existing surplus be used or will they need to raise funds to launch the contract? If funds needed, how will capital be raised? [1]
- Does LifeCo have sufficient capital to fund new business strain? [½]
- Is the new product making the best use of available capital? [½]

Accounting Systems/Tax

- Does the company understand the requirements regarding how the product will be accounted for and the tax that will be required to pay? [1]
- Is it different to the current products? [½]

Expertise

- Does the company have sufficient experience? [½]
- Or will it need to recruit suitable experts? [½]
- Does it have data available for pricing the product? [½]

Investment Strategy

- Different to other two products and therefore will need to consider how to invest any funds. [½]
- Would need a reasonable amount of liquidity for some of the cover, but others could be longer term. [½]

Will also need to consider the following factors:
The profit requirement for the new product. [½]
LifeCo's risk appetite – does the new product fit in with this? [½]

Will benefits pay for claims in full (care home or funeral) or offer fixed amount towards this? [½]
Any benefits on discontinuance? [½]
Terms and conditions relating to the product will need to be clear. [½]
Possible reputation issues – negative if product not successful or positive if very successful [½]

[Marks available 23, maximum 10]

(iii)

- Set capital requirements for the product including an approach to reserving basis and the stresses required for capital scenarios [1]
- Regulate around how any charges/fees could be applied – ensuring that the customer obtains a fair policy – could be a max cap in place [1]
- May also regulate the benefit amount offered [½]
- May regulate the rating factors which can be used [½]
- May restrict how assets could be invested and ensure that sufficient liquidity is always available to pay policyholders as required [1]
- May ensure that there is a "cooling off period" to ensure that policyholders understand the product they have purchased [1]
- Ensure that there are suitable safeguards in place to stop the company selling to vulnerable customers – e.g. banning cold calling, clear literature, sales process that enables advice to be regulated [½]
- Legislation around whether there is any incentive in purchasing the product e.g. tax relief on premiums or on payments being made [1]
- Regulate on how any payments need to be made – that is directly to the consumer or to the providers of the care/funeral costs, and if this is the case could ensure that the insurance company has suitable policies in place to ensure the care homes are of an adequate standard [1]
- Protection on how the data collected on any potential policyholders could be used (and also on its existing annuitant's information) [1]

Regulators could conduct regular inspection to check whether the company complies with the regulation on providing of the products, information provided to customers is adequate, reserving is reasonable and claims payments are fair to customers [½]
They may require suitable qualifications from those selling the product due to its complexity [½]
If there are complaints from customers on the products, services from the company regulator could also investigate suspected breaches and impose sanctions. [1]
Regulators could establish compensation scheme, likely to be funded by the industry in this situation, to provide compensation for losses due to fraud, bad advice or failure of a provider of the long-term care product. [1]
Regulator may require the company to disclose information to public/regulator (e.g. profitability, solvency, claims to premium ratio, fees/charges, etc) and also on the risks involved with the product [½]

[Marks available 15, maximum 5]

(iv)
<u>Competitors could enter the market</u> [½]
There is a risk that other insurers also see this as an opportunity which could put pressure on premiums and hence reduced profit for the company. This could be exacerbated if the other insurance companies have experience in products that are similar to care contracts or indeed

funeral costs (this could come from experience both domestically and also from overseas countries) [2]
As well as reducing profit there could be more competition to obtain the suitable expertise – this could therefore increase expenses which could impact the profitability further [1]
The banks could also enter the market with standalone products and could cherry pick the more profitable lines. They could also have more experience and ability to recruit the required talent also impacting the profits of the business [1]
The banks may price aggressively initially making it difficult to compete [½]
The banks could also have easier access to the customers that it wants to target, albeit the insurance company has the right age group via the annuities it offered. Country A however may have a culture of buying products from the bank and also the advice process could be set up for these products in a better way [2]
The banks may have more data and these could be used to target the market better such that the bank obtains the profitable element of the market leaving the less profitable business for the insurance company. As an example, it could use this data to select the "healthier" population meaning that the care cover wouldn't come until later on in the contract [2]

<u>Regulation/Government</u>
The regulator may restrict premiums/charges over a period of time once the contract had been launched, it could also make sure the contract allows for improved discontinuance terms [1]
They could also change the tax treatment in the future. This could impact profits or indeed demand if tax reliefs are removed. Given that the government is reducing funding any tax relief could be short term as it would incentivise to reduce the spending on care home initially but once the products are set up then this would no longer be needed [2]
There is also a risk of increased capital requirements for the product. Restrictions on allowable assets for investments could be introduced. A minimum level of care may be demanded. Also, if there was a change in government the cuts could be reversed [2]

<u>Public Perception</u>
If policyholders are seen to be treated unfairly this may impact the attractiveness of the product. This could come about if the insurance company dictated which placements were made and some policyholders ended up in the best care homes. There could also be concern from the public if there were onerous underwriting requirements both at the outset but also before being placed in the care homes [2]
If the product was considered unsuitable there may be a high withdrawal rate [½]
Also, if there is a change in culture this could impact demand – e.g. if families felt that they were better placed to look after their family members than care homes [1]

<u>Care Home/Funeral Directors</u>
If a product was offered then the number of firms could increase which could impact the quality. Poor standards of care could lead to reputation risk. This could therefore impact public perception. Equally the cost of these could increase if the industry knew that there was insurance in place, which would subsequently impact the costs of the policy [½]
Also, claims may be inflated [½]
There may not be enough care homes available so LifeCo may not be able to provide the promised cover. Some homes may go out of business and would be unable to provide care. [1]

<u>Potential policyholders</u>
There may be higher than expected anti-selection or non-disclosure [½]

Other parties
Reinsurers - could go insolvent
Investment managers – poor performance or operational risk
IT providers- system may not be suitable or flexible enough
Outsourcers – may fail or provide poor quality service
Third party distributers – any mis-selling could lead to reputation risk [2½]
[Marks available 23½, maximum 8]

(v)
Competition
- Act first and get the best reputation. They could also ensure marketing is first class and explain the benefits of having all of the cover in one product rather than separate contracts that would need to be claimed on [1½]
- Market research to ensure product meets customer needs [½]
- It could use its own database to target any advertising on the existing customers. The whole of life assurance product information could be used effectively. It should have more information from its annuitant policyholders that would be beneficial on postcodes etc. [1½]
- They are more likely to have experience in underwriting from its existing policies and therefore should use that to compete against the information the banks have. [1]
- Manage its costs carefully by using experience from other products [1]
- Monitor competitor products and amend pricing and/or design to remain competitive. [1]

Regulator/Government
- Engage with the regulator in advance to ensure they understand the product and the features of the product [1]
- Lobby the government on the benefits of the product and how it would help to reduce the long-term funding of care for government [1]
- Could also lobby for incentives to be given relating to the product [½]

Public Perception
- Ensure that contracts are very clear and there is little ambiguity in what members expect. The marketing could be clear on this as well – could use social media/adverts to explain in depth [1]
- Could work with family communities to ensure they understand any changes in cultures before they occur [1]

Care Home/Funeral Directors
- Due diligence will be needed to ensure quality as expected. [½]
- Could work with government to legislate against poor performing care homes and also about the maximum it could charge consumers/insurance companies [1]
- Could work with the care homes to link the product into the different levels of care or indeed use different care homes for different benefits [1]

Potential policyholders
Stringent underwriting will be needed [½]

Other parties
Reinsurers – use high quality reinsurers with good reputation
Investment managers – give clear mandate

IT providers – ensure contract is tight
Outsourcers – tight service level agreements will be needed
Third party distributers – ensure training and remuneration is appropriate [2½]
[Marks Available 16½, maximum 6]

(vi)
The company would need to ensure that any benefits offered were fair to the members and reflected what they had paid for [½]
So, benefits will depend on when the policyholder stops paying the premium, very little benefit likely in the early years [½]
The policyholder could be provided with a lower proportion of the promised benefit. This could be a reduction in the level of the care offered, or alternatively only a proportion of the costs covered and the family/policyholder covering the remainder. It could cover weekday costs with the family looking after the policyholder at the weekends [2]
Cover could be a fixed amount rather than full costs. Some of the benefits could be removed with others kept e.g. funeral cover (or part) only offered [1]
The insurance company could refund their premiums with no care cover or funeral costs covered. The insurance company would need to be careful of any possible anti-selection risks that could occur here [1½]
There could be a deferment of when the benefit would be covered – i.e. only start paying for care home once the policyholder reaches a certain age – however this could be difficult to administer and price for the insurance company [1½]
Alternatively, benefit could be offered but only for a limited set period [½]
The insurance company would need to consider the regulatory requirements for any repayment or changing of terms before offering any benefits [1]
Terms on early surrender may not be generous to discourage surrenders [½]
Need to consider the impact on profits and reserving requirements [½]
Consider competitors, and other similar products' paid-up value [½]
What's the general good practice that's been accepted in this country [½]
[Marks available 10½, maximum 4]

(vii)
Mortality – how long are the policyholders expected to live, this will impact when the funeral cover may need to pay out [1]
Will also need projected changes [½]
Sickness Rates – when are the policyholders expected to go into care [½]
Will also need projected changes [½]
How long the member will need care – that is how long payments will be made [½]
Expenses and expense inflation – what are the costs for the insurance company and how are these expected to increase [1]
Care cover costs – how much will these be and how much will they increase in the future
[1]
Lapse Rates – how long will workers be paying for the benefit [½]
Funeral costs – as above. [1]
Profit Requirements – what level of profit is needed. [½]
Business Mix– how much of each levels of cover are expected and at what price points.
Volumes of business – will affect new business strain. [1]

Will also need:
Investment returns
Tax rates

Cost of reinsurance
Cost of capital
Commission rates [2½]

[Marks available 10½, maximum 6]
[Total 42]

Part (i) was answered well by most candidates

Part (ii) was answered reasonably well with most candidates covering relevant points but only the stronger candidates really provided the depth or variety needed to score full marks.

Part (iii) was answered well with the main points being picked up by most candidates

Part (iv) was generally well answered well but only the stronger candidates went into the external parties enabling them to score top marks.

Part (v) was answered less well with the solutions being more generic rather than focusing on the answer being given which limited the marks that could be achieved

Part (vi) was answered reasonably well, but some candidates went into far too much detail on specific points

Part (vii) was very well answered by most candidates.

Q2
(i)
The main risks that the insurance company will be taking on are that there are more cancellations of trains and/or delayed trains than expected leading to a higher number of claims than expected [1]
This could be due to poor weather, strikes by staff and/or poor maintenance of the railways [1½]
This could be a bigger problem if the government or the outsourced firm decide that the railways have to shut for a period of time. Also, the government could decide to add additional stops making all delays slightly longer [1]
Risk that delays get worse moving from 1 bracket to another that is 30 mins to 31 mins meaning refunds increase from 20% to 40%. [1]

<u>Legislation Change</u>
- The government could make it compulsory to travel by train, but performance may get worse meaning that delays could get worse and then overall refunds increase [1]
- The government could change the refund policy. There may be other legislative changes resulting in additional delays and cancellations e.g. relating to health and safety, crew numbers and hours [1]
- Any tax benefit could be changed [½]
- If insured, then Government could relax requirements to run on time [½]

<u>Normal Insurance Risks</u>

- Expenses may be higher than expected due to the cost of administering being higher than expected [½]
- Ticket prices may rise faster than expected [½]
- More people travelling by rail could increase the cost [½]
- Predictions/Modelling errors – it could misestimate the likely number of travellers and also the delays [1]
- The outsourcer may not be as successful as hoped [½]
- Company has no experience in administering and claim payment on this type of product thus can lead to operation risk [1]
- Reputation risk if standards not deemed acceptable [½]
- Risk of aggregation of claims – may lead to liquidity risk [½]

[Marks Available 12½, maximum 5]

(ii)
The insurance company would want to obtain the data regarding the delays and cancellations over a reasonable timeframe, ideally broken down into the following areas: [½]

- Amount of time delayed and broken down by each of the places that the train stopped [1]
- Ideally broken down by individual journeys but if this isn't available then would want to have this by time of day – this is to understand whether the delays are in peak times when most people are travelling or off [1]
- Also broken down by month to be able to see any seasonal delays [½]
- Would like to understand whether the delays/cancellations are specific to certain cities and also by age/types of train [1]
- Reasons for the delays/cancelations – were there specific reasons for any delays – particularly over a period of time [1]
- Costs of the refunds – i.e. how many of the commuters claimed [1]
- What proportion compared to those entitled to claim? [½]
- Train ticket pricing across all routes and expected ticket price increases [1]
- Effective price refunded (allowing for season tickets, peak/off peak tickets) [½]
- Split into the 3 distinct time brackets where refunds are made, and also around the cliff edges (e.g. how many are 14 mins 58 secs late) [1]

The insurance company would also want to understand the number of commuters at the specific times mentioned above (peak versus non-peak). In particular would also want to understand the number of travellers and possible number of travellers in the six largest cities [1½]

Will also want to know any changes to train services. [½]
To price the contact will also need expense data and investment data. [1]

<u>Limitations:</u>

- The available data might contain errors or omissions, which could lead to erroneous results or conclusions. It might be difficult to know with certainty how big an issue it is – exact numbers of commuters may not have been recorded [1]
- There may be insufficient historic data available to estimate credibly the extent of a risk, and the likelihood of the occurrence of that risk in future [1]
- Even where there is sufficient data to estimate credibly future experience in normal conditions, there may be insufficient data available to provide a credible estimate of a risk in very adverse circumstances [½]

- Historic data may not be a good reflection of future experience. This will particularly apply due to the new outsourcer and the introduction of the new traffic charge so future trends will not be reflected in past data [1]

This could also be due to:
past abnormal events (e.g. weather)
significant random fluctuations
changes in the way in which past data was recorded
changes in the balance of any homogeneous groups underlying the data
heterogeneity with the group to which the assumptions are to relate
the past data may not be sufficiently up to date; and
other changes – e.g. social changes [2½]
The available data may not be in a form that is appropriate for the purpose required [½]
The available data may have been collected for a purpose, which means that it is not appropriate for a different purpose [1]

[Marks Available 19½, maximum 10]

(iii)
The company will need to analyse the data and understand what probabilities it needs to put on each of the possible delay groups and the cancellations [1]
They will also need to consider how these probabilities may change over time, in particular how the maintenance company may affect these assumptions, and also how quickly these could be affected [1½]
It will also need to consider whether the product is for one year and therefore the premium is reviewable or whether the premiums are guaranteed for a longer period with the government paying upfront [1]
Need to understand how and when the premium will be paid, will it be in one lump sum or regular premiums, this will impact how the company invest the money [1]
The insurance company will need to consider whether it needs to purchase or build new systems – this would both be for pricing the product but also for administering the policy [1]
Will the company be paying the train customers directly or will they be paying the government who will then subsequently be paying them. If it is the former then again does it have the infrastructure to be able to do this efficiently or will they need to pay for this (or outsource it) – all of this will need to be considered in the expense assumption for pricing the product [2]

How will the delays/cancellations be verified, will the insurance company need to record and track all train journeys and record the delays/cancellations or is this done in a more central approach by the Government – if the former then it will need the systems and resources to do this – again this will impact the expense assumption [2]
Give credit for any other suitable examples that imply the expense assumption will need to be considered in more depth [1]

The company will need to consider the other expenses in pricing and managing the product [½]
Will also need to consider how long to allow to claw back set-up costs [½]
Will the payments be increasing with inflation (i.e. train journey costs increasing) and if so how will this be reflected in the pricing – if the product is reviewable then this is fine, if it is a one off lump sum for a period of time then this needs to be considered in the pricing of the product upfront [1½]

The company needs to consider whether there are any regulation changes likely that will impact the product [½]
For example, is the government planning on introducing more traffic charges, or making train travel compulsory – that is the number of people travelling likely to increase and hence the possible payments out change materially [1]
Likewise, is there any regulation on how premiums could be invested, impacting the investment assumption for the company [½]
Terms and conditions relating to refunds will need to be agreed with the government [½]
How will any premiums be invested and what returns are likely to be achieved that can be reflected into the pricing [1]
Is there any competition likely for the product and if so, what experience do the competitors have (i.e. have they offered this in other countries or have data that would give them an advantage)? [1½]
There is only one customer (government) so the premium will need to be competitive (or not if little competition [½]
What is the culture like in the country to actually claim against this, and how will this be regulated – do tickets have to be shown, logged or is this done automatically – again all these assumptions would impact the pricing of the product [1½]
Could there be an increased likelihood of claiming, particularly if the government encourage it [½]
What level of capital is required and what is the cost of capital? [½]
Does the company need to raise capital and if so what return on capital is required from management/shareholders? Can this be achieved with sensible assumptions? [1]
What is the profit margin requirement? [½]
Does the company have the expertise or will it need to have experts helping in the modelling and pricing of the product? [1]
Is there any technology coming that will make train travel less/more popular impacting the number of train travellers? [1]
Similarly, any cultural changes making train travel less or more popular? [½]
Any expectation that the number of trains will increase/decrease [½]
How quickly will the maintenance company fix the issues – will this be quick [½]
What is the track record of the maintenance company? [½]
Will also need to allow for taxations and the cost of reinsurance [1]
[Marks available 27½, maximum 12]

Diversification - this is limited within the actual product, but this product could be considered because it helps the overall diversification of the company [1]
The company could diversify by investments and/or reinsurers [½]
Underwriting – this is again is unlikely to work particularly well because it is clear that the risks the scheme would be taking on. There is only one policyholder and one premium [1]
However, in its contract it could include exclusion clauses that the government would then need to pick up – e.g. train strikes, extreme weather impacts. This would be reasonable from the insurance company's perspective, especially if the train strikes are in the government's control (i.e. they may not be overly worried anymore because they are not picking up the cancellation/delay costs) [1]
There could also be exclusions relating to the age/condition of the train. [½]
Claims control systems – this is critical in the process [½]
Claims control systems mitigate the consequences of a financial risk that has occurred. They guard against fraudulent or excessive claims [½]

The company will need to guard against travellers saying they are delayed or cancelled when they weren't actually travelling – this will be particularly difficult if they are annual tickets rather than daily tickets [1]
Need to consider whether there is any way of electronically managing this – e.g. by linking "tap in" cards to a system where they can monitor [½]
Will need to check all train delays [½]
Will need to consider how they manage the impact of the refund changing with the three different time delays [½]
It could also consider cameras in some stations and track individuals that continually claim. [½]
Some of the above may be in place as the government already offers refunds. Could these be developed for the insurance company? [½]
Could insist proof of ticket purchase. Could ask for claim forms to be filled in for all cases, and the member to warrant these are correct [1]

<u>Management Control Systems</u>

- Data recording. It is important that the company holds good quality data on all the risks it insures, with particular emphasis on the risk factors identified when the product was designed. While this cannot change the provider's exposure to the business risks underwritten, it can assist in ensuring that adequate provisions are established for those risks and reduce the operational risks from having poor data [1½]
- Accounting and auditing. Again, good accounting and audit procedures cannot change the risks accepted, but enable proper provisions to be established [½]
- Monitoring of liabilities taken on. It is important to monitor the liabilities taken on by a company to protect against aggregation of risks of a specific type to an unacceptable level. Where the acceptance of risks involves the provider in new business strain, it is important to quantify the amount of new business to ensure that it is within the provider's resources [1½]

<u>Reinsurance</u>

The insurance company could work with a reinsurer to assist in the risk taking on, they may have experience that the company could utilise. They may be able to assist with data and pricing [1½]

Share the liability with reinsurer as quota share to reduce the concentration of the risk (or potential loss). Could also use excess of loss to reduce aggregation of risk [1]

Instead of taken on 100% of the liability from the government, consider sharing the liability, e.g. 50:50, so that there remains an incentive for the government to improve the punctuality of the trains rather than just assume the problem has now been mitigated [1]

Alternative risk transfer
Weather related derivatives could be used
Could swap risk packages with other insurers [1]

[Marks available 17½, maximum 7]

(v)
The traffic charge income could be a good match to its liabilities. Will be a good match to pensions by term and currency [1½]

The increases due to inflation again could be a good match to any inflation linked benefits that they are offering [1]
The return will all be income which will meet liquidity needs. [½]
The charges could be good diversification from the other assets it holds. [½]
There could be government incentives (tax benefits) to hold. [½]
The traffic charges could give an excellent return. [½]
Diversification given six cities. [1]
There may be a lack of other suitable investments for the pension scheme. [½]
There may be favourable treatment for solvency purposes. [½]
It may fit in with the investment objectives e.g. more infrastructure. [½]
It is government run so relatively low risk which may fit with risk appetite. [½]

[Marks available 7½, maximum 5]

(vi)

Advantages

It has the advantage of being easily made consistent with the basis used to value an investor's liabilities
There will be no market value so may be no other option
This may be acceptable to any regulator as it is relatively easy to explain

Disadvantages

It relies on the assessment of a suitable discount rate, which may be difficult to come up with for this unusual asset.
Several assumptions will be needed so it may be subjective.
This value may not be achieved on sale. [3½]

[Marks available 3½, max 2]

(vii)

Some issues may be covered in (viii). If so, give the mark in that part (and vice versa)
What is the expected income over the times being selected, is it impacted on particular days and times of year? [1]
There will be limited experience available as the traffic charge has been introduced relatively recently. [½]
Will need to allow for changes in car usage over the projection period. This will include drivers changing driving habits to avoid the traffic charge and changing to rail travel if reliability is improved. [1½]
Is there a different charge for cars versus lorries/trucks etc and if so, how much? [1]
This needs to be split out by each city.
This can then be used if entering different bids for the different cities. [1]
Inflation assumptions need to be considered for the 10-year period, what is the source for this? [1]
Is the model suitable for the cashflows? [½]

How the traffic charge decided?

- What is the traffic charge increase after 10 years?
- How many years the scheme can receive the toll with the given fee? [1½]

Consider any expenses for monitoring and collecting the traffic charges. [1]
And any inflation of these expenses. [½]

Administrative issue

- How will the charges be collected? By government or pension scheme(s)?
- If by pension scheme it likely needs to outsource to a third party

- Cost involved need to take into the expenses allowed for in the valuation [1½]

Taxation

- Taxation position of this contract must be taken into account [½]

Sensitivity of cashflows

- The scheme needs to run sensitivity tests to assess the factors that have most impact on expected traffic charge income [1]

[Marks available 12½, maximum 6]

(viii)

Some risks may be covered in (vii). If so, give the mark in that part (and vice versa)

There is a risk that the traffic charges are lower than expected in the valuation [½]

This could be due to:

How will the outsourcer for the train maintenance impact the traffic charge roads? If highly successful then the number of cars/vehicles going into the cities may significantly reduce meaning that the pension scheme could have overpaid for the asset [1½]

There could be improvements into the train journeys from technology that again could impact the change between car and train journeys [1]

Competition - Who else is interested, is there a risk that it turns into a very competitive process and therefore the returns are not as good as expected? [1]

If many schemes are willing to buy the rights, then competitiveness will be high and the fee high (and vice versa) [½]

What is the possibility of the contract being split up – is the diversification benefits of having all six cities at risk if these get split up and how will this be taken into account. May only get one city and this may have less income/be less attractive. [1½]

Are there likely to be further legislation changes – e.g. increase in petrol duty that would impact the number of journeys into the cities [1½]

Is there a risk that the cities popularity changes? If employees relocate either to another city or outside the city then there would be material impact on the traffic charges [1½]

Also, drivers may decide to drive outside traffic charge hours [½]

Change in work pattern/culture over the 10 years (more people work from home, or work flexible hours). This can reduce the number of people travelling in the peak times [1]

A recession or other reasons (e.g. a pandemic) may reduce traffic and so the expected income [½]

Are there any planned roadworks or maintenance on the roads that could materially impact travel times and hence the income from the traffic charges [1½]

How will the traffic charges be monitored and is there a risk that this isn't monitored correctly? [1]

Will inflation linkage change, and if high does this change the split of travel? [1]

Cultural changes, what if cars become less popular and more people walk/cycle [½]

Or fuel and/or vehicle costs rise or there may be green initiatives leading to less car use [½]

Tourism is unlikely to impact charges given the times but if it did then clearly a risk that the city becomes less popular [1]

What happens after the 10 years? Will charges change? [½]

Who controls the traffic charges and their increases? Risk if government decide to keep charge flat (i.e. no increase) or reduce it for political reasons. Also, a risk of a significant increase which could lead to less road usage and lower charges overall [1½]

There is also the risk of a change in government policy which may stop the charge completely [½]

Traffic charge might be free for cars with low CO_2 emission and there might be an increase in popularity of these cars in the future (i.e. electric cars) [1]

Give credit for any other suitable examples that imply the tolls would reduce in future. [1]

There will also be other risks:
Regulatory approval may not be granted so asset may not be admissible [½]
The asset will be illiquid and unmarketable [½]
and hard to value [½]
Also, there may be a liquidity issue on purchase if a very large sum is involved [½]

[Marks available 23, maximum 8]

(ix)

Financial

Refunds paid by insurance company exceed premium paid by government under Action1 [½]
Price sold is more than NPV of traffic charges under Action 2 [½]
Total traffic charges for road use have reduced [½]

Non-financial

More reliable rail service with fewer delays and cancellations. [1]
And also, fewer complaints [½]
Increased number of train users [½]
Reduced traffic on roads entering city [½]
Lower emissions in the six cities [½]

[Marks available 4½, maximum 3]

[Total 58]

Part (i) was answered well with most candidates producing a comprehensive range of points.

Part (ii) was answered reasonably well with candidates being able to produce a large number of points on data issues but only the stronger candidates able to say what data was required. Some candidates discussed how they would obtain the data which received very few marks.

Part (iii) was answered reasonably well but there was a tendency to produce generic points rather than making it specific to the question being asked.

Part (iv) was answered less well – with a lot of generic points being given rather than focusing on the specific scenario that needed to be considered.

Part (v) was answered well with most points being covered by majority of candidates.

Part (vi) was not answered as well as expected – this appeared to be a lack of understanding on this part of the course.

Part (vii) was not answered well with only the strongest candidates giving the depth and breadth of points that were required for this type of question

Part (viii) was not answered well – again generic points were made with only the strongest candidates having sufficient depth in their answer to score well.

Part (ix) was a question that created mixed responses from candidates with the stronger candidates doing very well as they considered what success would look like from both a financial and non-financial perspective – i.e. what was the government aiming to achieve.

[Paper Total 100]

END OF EXAMINERS' REPORT