INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2015

Subject CA1 – Actuarial Risk Management

Paper One

Introduction

The Examiners' Report is written by the Principal 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.

F Layton
Chairman of the Board of Examiners
December 2015

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

1. The aim of the Actuarial Risk Management 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.

B. General comments on *student performance in this diet of the examination*

1. As per previous sessions the candidates who were well prepared and structured their answers scored well on the questions.

2. Those candidates that did not think widely enough on the application type questions did not score sufficient marks to pass the exam.

3. Some of the questions were answered in a bookwork style – this shows that the candidate has reasonable knowledge of the course, but because this exam tests application, candidates need to ensure that their answers are relevant to the question being asked.

4. There were some questions that did test bookwork and a reasonable number of candidates did not seem to have the depth of knowledge to score well on these questions and therefore demonstrate knowledge of the whole course.

C.   Comparative pass rates for the past 3 years for this diet of examination

Year	%
September 2015	43
April 2015	44
September 2014	50
April 2014	41
September 2013	49
April 2013	44

Reasons for any significant change in pass rates in current diet to those in the past:

The pass rate for this examination diet is slightly lower than the April 2015 rate, but not materially different. Variation in the pass rate between sessions is expected as different cohorts of students sit the examination .

Solutions

Q1   Mean-variance portfolio theory specifies a method for an investor to construct a portfolio that gives the maximum return for a specified risk, or the minimum risk for a specified return.

An investor's liabilities can be taken into account by considering the size of the excess of assets over liabilities (i.e. the surplus).

This will be given by:

$$S = A \sum_{i=1}^{n} x_i (1 + R_i) - L$$

where S is the surplus at the end of the period
A is the value of the assets at the start of the period
x_i is the proportion invested in security i
R_i is the return on security i
L is the projected value of the liabilities at the end of the period

Mean-variance portfolio theory can then be applied to minimise the variance of the surplus for a given expected return, treating the liability as a negative asset.

In practice it will be necessary to decide how to place values on the liabilities and to determine, not only the expected value of the liability at the end of the period, but also its variance and co-variances with the assets.

A stochastic asset liability model could be used to do this.

> This question had mixed answers, there were a large number of candidates who did not know this part of the course at all and therefore did not score many marks. However those that did know this section of the course gave very good answers.

Q2 (i)   Insurance Company shareholders – the shareholders will want to make a profit from any solution that is designed.

Policyholders – will want a product that meets their needs – i.e. income that is available in retirement. The level of the risk of the policyholders will need to be considered.

Government/State – will be interested in how much tax they might be able to raise from profits earned by the company having the burden of providing pensions removed from them

Reinsurers – will be interested if they can help with any risk management for the insurance company – i.e. longevity risk.

Regulator – will want to ensure that the product is suitable and understandable from a policyholder's perspective – i.e. there are not complicated features and if the policyholder is taking risk then they fully understand the risks of the product. Concerns if capital intensive product but the company lacks capital

Employees – how many jobs will the new solution provide, if the product is hard to explain/understand

Professional advisers e.g. IFA, actuaries, lawyers – to understand the products they can target to their customers.

Management – reputational issues.

(ii)   Important that the consultancy is fully briefed from the client.

Some of the factual information will be in the public domain but some will need to be obtained from meetings with the client.

In a project meeting the consultancy will need to understand the risk appetite of the insurance company – this will determine the level of risk that could be designed into the product. If they are happy with longevity and credit risk the product could be designed like an annuity. But if the company has no appetite

for these risks they could design a product like income drawdown where the risk will be passed to the policyholder. Using this to consider things like reinsurance options

Does the insurance company have the required capital for certain solutions – this will be covered in the company's reporting results. Assets, sourcing and availability

The current employees – does the company have the skills required. And areas such as the administration platform in terms of ability to administer

Need to consider the demand for any retirement solution – has the insurance company already done some research on this.

Existing product range

How sold and profit criterion

Part (i)   This part of the question was generally answered well, with most candidates identifying the required stakeholders.

Part (ii)   This part of the question was satisfactorily answered, with the better candidates applying application rather than just reproducing the standard bookwork.

Q3 (i)   Liquidity Risk – risk that the individual or company, although solvent, does not have sufficient financial resources available to enable it to meet its obligations as they fall due.

Operational Risk – refers to the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events.

(ii)   (a)   The main liquidity risk for the GI company is not having enough cash to fund any claims that occur

The company should understand the likelihood of both the likelihood and magnitude of likely claims and this could be done by analysing the risks on the books (along with the types of claims for specific pets

The company can then ensure funds are available for any claims by having the required proportion in cash and other liquid assets

This is likely to be the case for most GI companies anyway

The company could also use premiums coming in to fund any claims – but claims could be higher than the monthly income so this might not be sufficient

Operational risk for this company could be a lack of understanding from the staff involved in the business – this could be managed by training

Manage system failures could mean that claims are not paid quickly enough, or there is not sufficient reserves being held for the liabilities (i.e. not all pets could be recorded properly) i.e. more than one person knows the system, regular checks

This could be managed by regular system checks against records – regular checking to ensure that all cases are being picked up

If one individual is responsible for managing any part of the process could be a problem (e.g. underwriting/claims management) – i.e., dominance risk – this could be mitigated by more detailed training of all parties or rotations

Identification of operational risk does require considerable input from owners and senior management and therefore regular brainstorming sessions and interviews with key staff should be done.

(b)   The main liquidity risk for the airline company is to have sufficient cash to meet outgoings (e.g. fuel/staff payments/maintenance)

Could put a small percentage fee on credit card/cheque payments as opposed to cash/direct debit

Holding cash in a number of currencies, based on the main locations that the airline flies to

The company will need to understand the likely payments that will be required over a period of time – e.g. how much fuel is required for the flights in every month

For other bills they might be able to negotiate payment terms that allow them to have more time to pay e.g. 30/60 days – this will give them more certainty on cash-flows

Understand the likely cash inflows (i.e. passenger payments) in relation to the outgoes

This could be researched to ensure all flights attract sufficient passengers – i.e. popular sites of interest

For some other certainty they could purchase futures – in particular fuel or currency futures – this would give more certainty in managing the liquidity risk

Operational risk – failure of systems could mean that flights are not booked

Need to have staff who speak languages of the main destinations flown

The systems should be checked regularly and strict SLA's to fix any issues should be in place

If they outsource anything – e.g. maintenance of the airplanes then there should be detailed contracts should the planes be on the ground when they could be fixed

A clear understanding of all the flights on a weekly and monthly should be logged to ensure that operationally the planes are in the right place at the right time – this should be managed and checked with trained staff

(c) The main liquidity risk here is having sufficient liquid assets to pay customer when they want their money back

The trust should ensure enough cash is included in the investment strategy but not so much that it is not achieving its investment aim – i.e. property. Limits on when realise units, more divisible units/liquid forms of property.

The trust might want to consider the types of properties that it invests in – i.e. a spread of the properties by size such that it doesn't have all its exposure in few properties that it would have to sell at a loss to get liquid funds.

The trust should have regular income from rents that could be used as liquidity

Also needs to understand the income from possible investors and manage this accordingly comparing to possible disinvestments

Could manage the liquidity by having terms that only pay investors back after a certain time on disinvestment instructions – e.g. 30 days but needs to ensure this is fair and understood

Operational risk – will need to keep valuations of the properties up to date meaning when they came to sell them they might not achieve the values they think – leading to volatile unit pricing

This could be managed by ensuring regular valuations by surveyors

In order to design a product that meets customer needs, demographics of the customer base/target market is needed

Use of distribution channels and any changes e.g. impact of the internet and simplified products

Part (i)	This part of the question was answered very well, with most candidates picking up full marks.
Part (ii)	This part of the question was satisfactorily answered, the better candidates applied their answers to the specific companies in (a)–(c) and ensured they described their ideas in a relevant way rather than listing generalities for each example.

Q4 (i) Net Asset Value per share (NAV) is defined as the book value of the shareholders' interests in a company, usually excluding intangibles such as goodwill, divided by the number of shares in issue.

This measure considers the value of assets as shown on the company's balance sheet, as such they may or not be realistic.

In particular, it is necessary to consider how (if) the asset values shown have been revalued or depreciated to reflect current values.

It is essentially the realisable (accounting) value of the tangible assets that are owned by the shareholders.

It is often considered to be the potential minimum value of a company if it were to be wound-up or otherwise disposed of.(In theory)

Net implies that values reflecting assets effectively owned by creditors (e.g. bondholders) are excluded

(ii) In general, an investor would compare NAV with the share price quoted in the market.

In theory, if the share price is below NAV then the share would look cheap and so it should be purchased.

If the share price is above NAV then the share would look expensive and so it shouldn't be purchased.

Though, as in (i), allowance will need to be made for the reliability or otherwise of asset values shown in the accounts – hence look at adjusted NAV.

Advertising Agency

In practice, it is very unlikely that NAV will be of much use in this case.

This is because, in general, profits and the value of the company are not directly (closely) related to fixed or tangible assets.

The company will not really have tangible assets – property is the only possibility but even this will be marginal in the context of overall company value.

The value of the company will come from intellectual property e.g. staff (creativity), contracts and contacts.

A lot of intangible value will be added to the core asset base in order to generate profits.

Hence, we would expect in the normal course of events that the share price would exceed NAV by a good margin – hard to say what this margin should be just by looking at accounts.

If NAV was close to or above the share price, this would imply serious problems i.e. a very poorly rated company – this could be a purchasing opportunity (if market has over-reacted) or it could imply that assets were overvalued in the accounts.

Miner

In theory, NAV should provide an accurate guide to the value of the company.

Hence the general metric should apply i.e. if share price is materially different from NAV, then a purchase (or not) may be attractive.

The company generates profits from the exploitation of natural resources – hence profits will be closely linked to the value of these resources.

In particular, the company will have a large amount of fixed assets.

A significant proportion of which, will be made up of the value of unexploited reserves i.e. the value of the company will be closely linked to the value of its assets.

Other significant fixed assets will include property and mining equipment – this may have limited value if not used by the company i.e. can't be sold – so care will be needed.

Market prices of natural resources can be very volatile and it is unlikely that values shown in the accounts will change as frequently – so adjustments will be needed when using NAV.

Allowance will need to be made for the quality of stated reserves (worth full market price or are they known accurately or just guessed) and for costs of extraction if they are significant – both could reduce asset values markedly –

so again adjust NAV. The right or initiative to go mining somewhere is future potential, an intangible asset (or other valid comment)

Manufacturer

In general, it will be difficult to say how useful NAV will be in this case. Depending upon circumstances, NAV may or not be a guide to expected share price.

A lot will depend on what the company manufactures and hence the size of the asset base and the value added to stock and raw materials.
Capital intensive industries or those that use a lot of raw materials may well have a value related to asset values.

Those that are labour intensive or are technology based say, probably won't i.e. value added to core assets.

Much of the asset value will be made up of factories, stock and machinery.

This may not have an alternative use and so unless the company is a going concern, NAV may not help in assessing share value.

In particular, in this case, the company may be struggling and so NAV could reflect a potential wind-up value or takeover value to a purchaser (buy and break up – asset strip).

But in this case, accounting values may be overstated relative to realisable values.

Otherwise, a low share price relative to NAV could represent an opportunity for a capital gain.

Part (i)   This question was not answered well. The definition's given were not precise enough to score full marks. Also some candidates did not know this section of the course.

Part (ii)   This question was also not answered. There was a significant lack of depth in the answers with a lot of candidates focusing on the bookwork without considering the specific companies and why the measure would be useful or not. Some candidates did not appear to understand the concept of the measure.

Q5 (i)   The model being used must be valid, rigorous enough for its purpose and adequately documented.

The model chosen should be capable of reflecting the risk profile of the financial products, schemes, contracts or transactions being modelled adequately.

The parameters used must allow for all those features of the business being modelled that could significantly affect the advice being given.

The inputs to the parameter values should be appropriate to the business being modelled and take into account any special features of the provider and the economic and business environment in which it is operating.

The workings of the model should be easy to appreciate and communicate. The results should be displayed clearly. The model should exhibit sensible joint behaviour of model variables

The outputs from the model should be capable of independent verification for reasonableness and should be communicable to those to whom advice will be given.

The model, however, must not be overly complex so that either the results become difficult to interpret and communicate or the model becomes too long or expensive to run, unless this is required by the purpose of the model. It is important to avoid the impression that everything can be modelled.

The model should be capable of development and refinement – nothing complex can be successfully designed and built in a single attempt.

A range of methods of implementation should be available to facilitate testing parameterisation and focus of results.

It will be necessary to decide between deterministic and stochastic modelling processes

The dynamism of the model is vital i.e. interactions of variables

Actuarial judgment is needed – parameter setting

(ii)   The model needs to allow for all cash-flows that may arise in future and should be able to model the data from past sporting events, so decide on data and cash-flows to use

The model should also allow for cash-flows arising from the individual's lifestyle e.g. mortgage payments, so decisions as to whether all of the expenses of living are to be covered, if not, which ones

The model needs to allow for interactions between the different cash-flows, so how to allow for these interactions

The model needs to strike a balance between realism (which will make it more complex) and simplicity (which will mean that the model is easy to use and the results are easier to understand and check). This will also affect cost. So decide on budgets and the balance to be struck

There is much data available to derive assumptions for the model, what assumptions to be used and what data

The model should be built to evaluate the probabilities of wins and losses and could be based on stochastic techniques, scenario analysis or stress testing as these methods can be used to allow for unlikely events i.e. incorporate probabilities

Decisions as to the form of the model, the number of simulations, choice of parameters, method for estimating parameters (need to get at least two of these)

This will also provide a guide to the likely distribution of the capital requirements and the potential spread

The projection period chosen will reflect a balance between:

The time it takes to run the model (e.g. more frequent cash-flow or longer projection period means longer run time)

The required accuracy of the results (e.g. more frequent cash-flow or longer projection period means more accurate but risk spurious results)

Sensitivity analysis should be used to analyse the sensitivity of the results of the model to the assumptions used

Output of the model should be in an appropriate format that can be easily communicated

Factors to consider:

There are really three possible sources for the model.

- Buy a commercial modelling product.
- Use an existing model possibly after modification.
- Develop a new model.

In general, the approach used will depend on:

- The level of accuracy required.
- The expertise and resources your individual has access to.

- Whether the model needs to be flexible so as to carry out related tasks.
- The cost of each option relative to any budget.
- Availability of data to do the task- lots of race data

Unique use and personal to circumstances so development of own model is preferable

The model required is unlikely to have wider applications, may take a very broad-brush approach using judgement (gut feel) rather than detailed modelling.

(iii)   Nature of the cashflows, fixed or increasing
Which will dictate the nature of the gamble that will be undertaken
How often to place bets
And the maximum amount of bets to place

Term, general, short term or long term
Currency of the individual's expenses and thus the gamble
Certainty, these are living expenses so likely to be certain although may need to allow for one offs/unexpected expenses
Of the individual's liabilities

Gambling cashflows – money to lay the bet, winnings
Compare to the individuals outgos, and any other income, if there is any

Need to understand the exact liabilities of the individual

The tax status of the individual and how this is impacted by the new income

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Part (i)   This was generally answered well with most picking up the correct part of the course.

Part (ii)   Those candidates that focused on the data, the nature of the cashflows and the potential problems answered this question well. Other candidates were too general (i.e. did not apply the solution to the question being asked) to score the depth of marks available and some went into too much detail on specific parts of the answer and therefore not covering enough of the answer in breadth.

Part (iii) Some good answers to this question, especially where the candidates focused on all the potential characteristics. For some candidates there was a lot of repetition.

Q6 (i) To show the financial effect of divergences between the valuation assumptions (expected) and the actual experience

To expose which assumptions are the more financially significant

To show the financial effect of writing new business

To provide a check on the valuation data and process, if carried out independently

To identify non-recurring components of surplus thus enabling appropriate decisions to be made about the distribution of surplus

To give information on trends in the experience of the company

To check original pricing models-profit tests

Check of investment policy developed in designing policy

Whether development costs were recouped

And whether ongoing expenses are being covered

Management Info, information for accounts, executive remuneration scheme, reconcile successive results, sum of individual variances agree with total variance, regulatory requirement.

The results of this analysis will give an initial indication of whether the profitability criterion used in designing the product in the first place is being met in practice.

This can be used as feedback information in the actuarial control cycle.

(ii) Morbidity – the rates of people claiming on the health insurance product due to illness could have been lower than assumed in the pricing basis.

Inception and termination rates – these could have been favourable for the health insurance company

Withdrawal/lapses – these could have been lower than assumed, meaning premiums have been received for longer than expected, this would be beneficial in conjunction with lower claims.

Investment income and gains – the assets that the health insurance company had invested in could have done better than anticipated.

Expenses – Initial and renewal – the company could have become more efficient or the costs of the running the product have been lower than anticipated.

Commission – this could have been lower than expected, or more sales have come from advisors on lower commission compared to the average.

Inflation – the impact of expense inflation could be lower than expected. Also the cost of supplying medical services could also have also not increased in line with the expected inflation rate.

Taxation – tax rates applied to the product could have been lower.

Premiums/contributions paid – these could have been better than expected.

New business volumes – these could have been better than expected, and in particular the mix of business could have been more profitable than expected.

Claim – frequency and severity – the claims could have not been as high as expected, either through lower numbers or conditions not being as severe (and hence costly to care for) than expected.

Reinsurance default – if there is no reinsurance defaults the reserves for this risk could have been released.

Change in valuation basis – this could have come about from regulatory change i.e. the prudency levels could have been reduced.

(iii) Control expenses

Expense investigation – e.g. may have too many premises, cost savings

Reduce the likelihood of claims through good underwriting of new business

However this can have the opposite effect, forms may be too long and put people off or alternatively may be open to non-disclosure so bad risks accepted

Improve claims underwriting

Claims validity, need to monitor and ensure that there is sufficient data and staff qualified to monitor fraudulent claims or not meeting the policy wording

Revise claims handling processes; this includes claims in payment for things like income protection, where policyholders need help getting back to work

Use reinsurance to limit the volatility of claims or to protect from the risk of large claims

Increase volumes of policies sold in order to generate higher profits and cover expenses, e.g.:

- Remove unnecessary margins in the pricing basis (e.g. if overly prudent)

- Revise the product features; add new, innovative (cost effective) features

- Increase marketing or improve the marketing message, brand, reputation

- Improve the quality of sales staff/advisors through training

- Change distribution channels/sales methods e.g. internet may be more convenient (although for complex health policies such as long term care this would not be appropriate)

Increase in new business volume will cause a strain, thus may temporarily worsen the solvency position

Also increasing new business will not help if current business is loss making, maybe need to revise the product, review premiums etc.

Change in business mix. Need to increase (or start to sell) the amount of profitable, capital efficient business and stop selling unprofitable business – looking at the previous profit test model and comparing actual v expected will identify this business

So the health insurance company could make the products more capital efficient e.g. by removing guarantees.

Actual versus expected will show if changing the pricing basis will increase new business profitability/need to ensure that the pricing assumptions reflect current experience

Look at persistency, improve by improving after sales, also note if there is a discrepancy by broker

Increase the number of policies that renew at the renewal date

Reduce the number of contracts that lapse

Revise wording and format of proposal forms and sales literature to minimise risk of anti-selection

Reword policy contracts to remove any hidden mistakes in policy design which have surfaced, check excesses, exclusions etc. Look for loopholes

Revise the mechanics of commission payments and clawback to improve persistency experience or to reduce capital strain

Improve the quality of customer services, reputation, brand awareness

Review the competence/efficiency of staff-staff training

Review reinsurance arrangements

Adopt an effective tax management policy

Consider tax efficiency throughout the business – may need consultants

Follow an investment policy that increases investment returns (subject to an acceptable level of risk)

Investment strategy – may be too aggressive and losses made or alternatively needs shaking up, updating to current liabilities, to improve returns

Raise capital e.g. financial reinsurance/securitisation. Or reducing of dividends
Improve the systems and data recording processes – errors that are over looked are often at the data manipulation stage

Merge with another company or sell off part of company

Consider outsourcing e.g. claims control, investment

Look at reviewable premiums and charges but beware of treating customers fairly.

Increase reviewable premiums if experience suggests

Look at whether the solvency basis is overly stringent and can be relaxed at all, this would need to be done on accordance with the regulator

Part (i)	This question was generally answered well.
Part (ii)	This part of the question was answered satisfactorily with the better candidates focusing on the points relevant to the health insurance company, with the poorer candidates not going into sufficient depth in their answers to pick up the points. The better candidates also focused on a range of sources rather than focusing on one specific area and going into lots of detail on that.
Part (iii)	Those candidates that planned their answers scored well and covered the issues in sufficient depth. Other candidates did not think widely about the issue – e.g. many overlooked raising capital completely, others went into one area in lots of detail and therefore missed available marks for covering lots of options.

Q7 (i) Administration
Accounting
Statutory returns
Investment
Financial control, management information
Risk management
Setting provisions
Experience statistics
Experience analyses
Premium rating, product costing, determining contributions
Marketing

(ii) The funeral director will need to consider the number of policies that might be sold

This will relate to the population of the town, and proportion of those individuals who would be interested in paying in advance for a funeral

The interest for this policy may vary for different age groups and also those with different levels of wealth or income, location, occupation, health, sex

For example younger people may have no interest in planning for a funeral

Those on very low incomes may not be able to afford to save, while those with higher levels of wealth may not see any benefit from ring-fenced savings

Every policy is guaranteed to pay out if still in force after ten years as every individual will eventually die

Therefore the key items to be priced are the amount to be paid

And when that payment will be made

The amount to be paid will depend on the cost of services provided by the funeral director

Services may be standardised and therefore an estimated fixed cost can be used

If there is no standardised service, it will be necessary to define the level of services being purchased at the time of entering the funeral bond, so data would be required on the distribution of policy sizes taken out

As costs will vary over time, information on the possible level of inflation will be required. This will include material costs and the cost of salaries for those working at the funeral directors

Historic rates of increase will be required for comparison to inflation indexes

When the amount will be paid will depend on mortality

This will be based on the experience of existing policy holders (if data is credible)

Or data to compare funeral bond holders to the general population mortality rates

There may be significant selection due to the nature of the policy which will attract those in poor health and the way in which this is marketed, i.e. direct sales

As well as analysing mortality rates by age, analysis may need to consider the age at which (or number of years since) the funeral bond was taken out

Data will also be needed on cancellation rates

Which will be particularly important as cancellation should generate a profit for the funeral director. Or a loss if early on in the contract due to initial expenses not being recouped

These rates are likely to be needed both by number of years since the funeral bond was taken out and by age

Data will also be required on the expense of managing funeral bonds

This should be split into fixed overheads and per policy expenses

With consideration of the impact of future expense inflation

Mortality improvements data

Investment returns data

Male:female ratios, especially useful in a gender neutral world

Need to be aware of premiums that competitors are charging so that the product is competitive and also not underpriced

(iii) Both products are assurances which will pay out a lump sum on the eventual death of the individual

The key data will therefore be similar, requiring data relating to volume of sales, mortality and expenses

One key difference is the size of the lump sum benefit

Whole life assurances could be for a far wider range of values, compared to what may be standardised values for the services for the funeral director

However, unless the sum assured for the whole life assurance is inflation linked, there will be no need for the insurance company to consider inflation relating to the value of benefits

As a result the insurance company will require additional data on the sums assured

As the insurance company has national coverage, it may wish to have data on the location of individuals which may help in setting its pricing terms

The wider coverage may expose the insurance company to greater levels of selection, or provide diversification benefits – so experience may be more or less variable

Although if the insurance company varied pricing by region (using homogenous groups) these affects would be reduced

This would not be as relevant for the funeral director as all individuals are from the same city, although there may be variations by regions or boroughs

There may be concentration risk, with greater exposure to catastrophes for the funeral director due to being exposed only to one city

The funeral director may, therefore, wish to consider the extent to which data has been distorted by catastrophes

Due to a potential larger volume of products the law of large numbers may apply more to the insurance company

This may reduce the volatility of experience and hence increase the value of detailed data on which to set assumptions more precisely

In addition with a larger volume of products the insurance company may have more predictable expenses

The insurance company may need to consider contributions to overhead expenses

And in addition may need data on the distribution channel used

Both for assessing expenses, and for any impact this may have on selection

The funeral director and insurance company will have different requirements relating to lapse data due to the likelihood of different surrender benefits applying

Lapse rates are likely to be more sensitive to the number of years the policy has been in force for the funeral director – which may be particularly important data

Insurer will have an underwriting function and so data will be needed to support this, year of entry, duration since acceptance.

Part (i)   This was generally well answered with the better candidates spotting that this was pure bookwork and scoring most/all of the marks available.

Part (ii)   This had mixed answers, a lot of candidates scored well but could have done better by going into more detail on some of the answer. Others went into too much detail on some parts of the answer rather than focusing more widely (e.g. talking about grouping the data and how to use the data, rather than answering the specific question being asked).

Part (iii)   There were some good answers to this question with the better candidates "comparing" the two company's requirements rather than just focusing on the insurance company.

END OF EXAMINERS' REPORT