INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2012 examinations

Subject SA1 – Health & Care
Specialist applications

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.

D C Bowie
Chairman of the Board of Examiners

December 2012

General comments on Subject SA1

Candidates who approach the questions, especially the more substantial elements of each question, in a methodical and detailed manner are far more likely to pass the subject. Candidates will gain few marks if they do not address the question asked but merely write around the topic of the question. The mark allocation for each question part gives an indication of the relative length of answer or number of points to be made to gain full marks. It is often helpful to use subheadings when answering long part questions.

Comments on the September 2012 paper

The general performance was similar to that in April 2012. Well-prepared candidates scored well across most of the whole paper. As in previous diets, questions that required an element of analysis or application of knowledge were less well answered than those that just involved repeating bookwork. 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 include these areas in their revision.

1 (i) **Enter into a joint venture with an existing company such as badging or coinsurance**

Advantages

Easy, quick and potentially low implementation costs

The company will already be established with customers, distribution network and products and hence expertise readily available

Each company retains control of its existing business

May be able to cross sell life insurance products to policyholders of the other company

Disadvantages

Each party will be affected by any past or future brand issues of the other party

There may be ongoing issues with sharing data, IT, products, distribution etc.

Need to maintain contact with the partner

There may be problems relating to the cultural fit

Less control of the future direction of the joint venture and will need to manage the joint venture alongside existing business

It may be difficult to find another company willing to enter into such an arrangement

Will share risks but also share profits

Merge with an existing company

Advantages

Company will already be established with customers, distribution network and products

There may be opportunities for synergies/cross selling/increased economies of scale etc

May be able to identify underused talent in the target company

Provides an opportunity for both companies to make a fresh start

Disadvantages

Could be expensive

Potential legacy issues with brand of existing companies, data, products, IT, distribution etc

May have little or no cultural fit with the partner

Loss of control over existing and future business

There may be problems with staff morale etc, especially if merger partners not of equal size/influence

It may be difficult to find another company of broadly equivalent size, to avoid too much disparity

Launch a set of UK health and care insurance products, for example, by establishing a new subsidiary company

Advantages

Can use existing overhead infrastructure, existing staff experience, where relevant, e.g. management

It may be possible to capitalise on own brand image

Will retain full control of existing and future business

May be able to use existing reinsurers and other advisors for assistance

May be able to use existing distribution system, depending on product similarities
Will keep all the profits but also all the risk
No legacy, reputational issues relating to other companies

Disadvantages
May need to obtain authorisation for new product types
Need to set up the new products. May be difficult to do so as the insurer has none of its own relevant data or experience
Need either to design new systems or to adapt existing ones, which may have legacy issues
May need to develop new distribution methods (depending on products).
The insurer has no existing staff expertise. It may take time to become established and profitable in this new market, particularly as the company is not currently associated with health and care products
May require more capital than the other options, depending on development outlay
If a proprietary company, need to consider shareholder/market view and appetite for risk
There may be tax implications

Invest/purchase shares in an existing company
Advantages
Simple, quick and no significant set up costs
Easy to get into and out of, provided the shares are marketable
Should provide good diversification: can invest in a range of health and care insurance companies

Disadvantages
Possible tax issues and solvency issues, i.e. may not be ideal assets to back existing liabilities
No direct control, unless large investor
There will be trading costs
Exposed to the company's other business activities/ dilution of returns
The insurer doesn't gain any experience/data via this route
Only applies to proprietary companies

(ii) The starting point would be to see whether any data can be obtained directly from the target company. If this is not possible, look for publically available information such as regulatory returns. Compare the information to similar items for own company and also to wider market or reinsurer data. Adjust external data to take account of the profile of the target company's policyholders

The starting point for the calculation would be the appraisal value which = embedded value + value of goodwill. Use the information obtained to estimate the embedded value of the company

Embedded Value = shareholders' net assets + Value of In Force (VIF)

Net assets should be determined as the market value of assets less the value of liabilities as allowed for in the VIF calculations For the VIF, choose appropriate model points based on the information available

Project forward future cashflows and discount back. The assumptions will initially be best estimate and allow for expectations of future trends. Need to make allowance for future claim amounts, if indemnity business sold. As the company is being valued by the purchaser, more prudent assumptions will be used for sensitivity calculations. Vary levels of prudence to understand the sensitivity of the key assumptions. The risk discount rate will be based on the purchaser's required rate of return on the transaction allowing for the inherent risks and uncertainty within the cashflows

Assumptions made will be based on those for equivalent items in the purchasing company where relevant (life insurer) and based on information in the statutory returns of the target company and also may be compared to those in the statutory returns of similar health and care insurers and other publicly available information such as industry experience surveys
Mortality/morbidity assumptions need to be based on the policyholders of the target company
Should allow for costs and recoveries of any reinsurance arrangements allowing for any treaty renegotiations
Allow for commission on current structure for existing business
Allow for own expected post takeover policy expenses taking into account expense inflation
Allow for potentially reduced costs due to synergies between the businesses e.g. expenses, reserving capital, tax
Persistency will need to take into account the profile of business and any effects brought about by the takeover. For example, there may be policyholders who are unhappy about the takeover and therefore lapse

Use own methodology and assumptions for statutory reserving and allow for the effects of combining the business into own existing solvency position, e.g. on any minimum reserving requirements

Investment return will be consistent with risk discount rate and expense inflation taking into account the post takeover investment strategy

Tax will need to incorporate any changes as a result of combining the businesses and taking account of any differences between the taxation of the life and health insurance business

Also need to allow for non policy-related costs of takeover e.g. redundancies, costs of policyholder communications, the costs of any outstanding Solvency II development expenses, the impact of any pension scheme deficit, potential relocation costs

The goodwill component, which reflects the value of expected future new business, should also be added. This will be based on current new business volumes and expectations of potential future market performance of the target

company e.g. based on their business plans, if available. The value of this new business should be estimated e.g. based on new business disclosures, if available. Assumptions used should be as for the existing business, allowing for any known differences e.g. changes to the commission structure post integration. Any planned changes to marketing strategy should be taken into account

Consider any published embedded value figures e.g. supplementary information in the Report & accounts and look at the share price and market capitalisation, if the company is listed

(iii) Will the purchase be the whole company or a division. If a division how will it safeguard key staff etc from being moved out of the transferring division
Quality of the target company's workforce particularly its senior management
History of industrial relations
Internal controls e.g. fraud prevention, risk management
Cultural fit with company
How willing is the target company to sell
Does it meet all of the takeover objectives?
Customer base compared to its existing customers e.g. potential to cross sell its current products
Range of products
Range and quality of distribution channels
Ease of administering existing business
Any possible legacy issues
Quality of systems
Quality of illustration and alteration systems
Quality of policy records, literature
Claims and underwriting processes
Complaints history and outstanding complaints
Any potential mis-selling issues and any other outstanding reputational/legal issues
Location of the target company
Plans for the workforce, offices
Fit with existing distribution channels
Integration/migration plan
Any additional costs of the takeover (e.g. advisors, legal, stamp duty etc.)
Payment method e.g. cash only and availability of sufficient existing capital to fund the purchase or, if not, ability to raise it and the related cost of capital
ICA and ICG impacts
Expected Solvency II impacts
Credit rating of target and likely impact on own credit rating
Capital structure of target
Quality of data
Quality of experience investigations
Quality of any assets being purchased and how well matched they are
Any high risk investments e.g. derivatives
General economic outlook
Need to get warranties in place if any outstanding litigation. Also warranties for data quality etc.

Whether a process can be put in place for some repayment if the quality of business/accuracy of takeover information is not as good as expected; similarly if systems, data etc not as good as expected
Quality of any third party arrangements and will they still be available e.g.:

- Reinsurance arrangements
- Third party administration
- Medical providers e.g. hospitals

Regulatory constraints
Monopolies Commission
Time taken to complete purchase
Potential level of management distraction and whether it would have a negative impact on other key projects
Margins in any key assumptions used to determine the price
Sensitivity testing
Other potential targets
Alternative uses of capital
Market reaction if purchase goes ahead
Shareholder reaction if purchase goes ahead
Whether it is a competitive bid
Other recent similar deals (their price, lessons learned etc)
Need to treat customers (of both companies) fairly throughout and after the process
Who will pay outstanding claims

Part (i) was generally well answered although candidates needed to pick several entirely different examples in order to score fully. Answers were usually well set out using headings and listing advantages and disadvantages separately. The amount of detail provided by candidates for parts (ii) and (iii) varied, with the better candidates covering a wide range of points.

2 (i) The most important reason is physiological differences – that male and female policyholders simply have different bodies

There are certain illnesses and diseases that only one sex can physically suffer from, such as gynaecological diseases or testicular cancer. Moreover there are many illnesses that are far more prevalent in one sex or the other, such as breast cancer. Also, certain life experiences only occur for one sex, such as pregnancy, and this can give rise to differing morbidity experience

Women live longer than men so durations of claims likely to be longer for women

Lifestyle factors are also very important in differing morbidity experience, e.g.:

Different occupational distributions with more male policyholders holding "blue collar" manual jobs
Different alcohol intake patterns
Different smoking patterns
Different health choices such as diet and exercise

Different propensities to take up hazardous pastimes

Different social factors also play a part, e.g.:

Propensity to visit doctors – male policyholders may be more likely to wait for a longer time before they visit the doctor
Differing understanding of health and lifestyle choices
Potential stigma attached to health and healthy choices

The degree of difference is likely to vary by product

(ii) The key reason is likely to be to avoid anti-selection. The morbidity difference described above means that the "theoretically correct" premium rate will differ between males and females. If only one combined rate is charged, an average rate needs to be set. The insurer is more exposed to the risk of the gender mix differing from that expected or loaded into the combined rate.

Individuals will "shop around" for the best rate. If a competitor offers different rates, it may be able to offer cheaper rates to females than males (or vice versa, depending on product). Females will tend to go to the competitor with cheaper rates, but men will come to the combined rate, which is cheaper for them. This will lead to poorer experience than assumed in the pricing basis, and losses will be made.

The company might alternatively decide to charge the higher of the two rates as its "combined" rate, which would have adverse implications for the amount of business sold if competitors charged differing rates.

(iii) In the group market, simplicity of pricing basis may be paramount especially as business can be very high volume.

Some of the differences may not apply for a group (e.g. occupation).

A blended rate can be charged which takes account of the overall mix of males and females in the group in question. This mix may be fairly stable overall and at least it is unlikely that actions will be deliberately taken to create a selection effect. The blend in the rate can be reviewed at the annual review of the group rate.

Group business is often subject to profit sharing which further reduces the risk of adverse selection.

(iv) Advertise in places in which different sexes will see the adverts, such as magazines clearly targeted at a specific gender and/or television adverts placed in the breaks of targeted programmes (e.g. football match v. lifestyle programmes). Consider billboard advertising at shopping malls v football stadia

Offer discounts for services with a gender bias or market to affinity groups

Use different language and styles to appeal to different groups and/or different colours (e.g. pink/blue) and/or different branding, names etc.
Highlight specific illnesses covered
Have different sales teams, with different manners of talking and listening
Use worksite marketing that targets specific occupations which have a particular male or female bias

(v) In theory it should reduce anti-selection risk

May be able to charge a more appropriate combined premium since should be able to predict better the gender mix e.g. if engaging via a women's magazine, should be able to predict a high proportion of female take up). Hence may also allow a lower margin in the combined premium than would otherwise be required, since lower gender mix risk

May be able to capture attention more effectively as males and females absorb information in different ways (e.g. colours vs shapes). Hence may even increase sales volumes

May be able to use the approach to target sectors of the population with expected low morbidity, such as higher socio-economic groups, or gym go-ers

However, this may add to cost and may still be subject to anti-selection, especially if consumers wise up to it

May be seen as unfair if premiums differ according to the specific marketing channel. It is also possible that this may be deemed to be an indirect breach of the new legislation, which will depend on the precise wording of the legislation; therefore the insurer may be exposed to potential reputational risk

Risk of business mix (and hence pricing) not being as expected if the strategy is not as successful as anticipated

Need to consider treating customers fairly

(vi) When the company sets its new price under the new basis, it will have an assumed mix by gender. If it can collect gender data then it will know what it is actually writing; if the actual mix is very different, the company will know almost immediately and can review the price

If it cannot collect gender data then it will be many years before it will find out that the rates are (potentially) loss making

The data is also important as the company will need to set appropriate gender specific reserves

If it cannot collect gender data the company will need higher margins in pricing and reserving

If reinsurance is not covered by the proposed legislation, then collection of gender data may help the insurer to get better reinsurance prices

(vii) Add margins to premiums against risk of mis-pricing particularly the risk of gender mix differing from that expected
Monitor experience frequently
Review rates frequently/write reviewable premium business
Increase underwriting to address underlying risks contributing to the gender gap
If possible, price based on proxy rating factors such as occupation
Check competitor rates to guard against risk of under-pricing
Reduce exposures, e.g. by reducing maximum benefit levels
Stop writing business with significant gender morbidity risk or write other business with less gender risk, such as group business, to dilute the risk
Write business with the opposite gender risk e.g. if currently write a lot of critical illness business, start also to write long term care insurance (to mitigate the risk that for some reason your brand appeals more to one sex than the other)
Increase proportional reinsurance
Get reinsurance for the technical assistance, as reinsurers may have ideas on how to tackle the issue
If the company has a significant lapse and re-entry experience, could set up a retention team
Write business in countries that do not have this restriction

Part (i) was generally well answered; some of the suggested reasons for differences in morbidity brought some light relief for the examiners.

Part (ii) was a basic application question on anti-selection. It was surprising how few candidates were able to demonstrate a good grasp of this important idea in their answers.

Parts (iii) and (iv) were generally well answered.

Parts (v) and (vi) were not well answered. Most candidates appeared not to think around the question widely enough to come up with sufficient different points to score well. This was also the case for part (vii) where again candidates often only made relatively few points, usually just listing standard points such as adding margins, reinsurance etc but not considering other ways of mitigating the risks such as changing the types of business written. These types of application question provides the opportunity for gaining marks if candidates provide a logical approach to their answer and think beyond the standard points.

3 (i) The benefits offered under PMI could be extended to include alternative medicine in addition to conventional medicine
It could be included as an optional rider or a standalone product
If alternative medicine is already offered, then the amount covered could be increased or the range of treatments covered extended
Alternative medicine practitioners could be added to any lists of preferred providers

A helpline or other form of advice could be given whereby claimants can find out what alternative medicine options are available to them
A "taster" session of a particular form of alternative medicine could be offered with each policy sold – e.g. free acupuncture appointment with an approved provider
The insurer could produce literature to help their policyholders weigh up the evidence around different forms of alternative medicine
The insurer could offer the policyholder support in understanding how to find a reputable practitioner
Could offer as a cash benefit rather than on an indemnity basis

(ii) Meeting needs – some alternative medicine may not have sufficient proven health benefits to justify it as a method of treatment. The alternative treatments may be costly without evidential benefit
Alternative medicine can be more associated with the relief of chronic rather than curing acute conditions, so does not sit closely with the standard UK PMI benefits
Reputational risk – the insurer may not wish to put itself at risk of unsuccessful treatment, especially in the case of "more alternative" or less well researched therapies
The insurer may not wish to detract from the importance for the policyholder of obtaining the relevant conventional treatment
Look at referral process as GPs act as gatekeeper and may be less keen on alternative medicine referrals, making claims harder to validate

(iii) *Claims assessors:* will need to adjust their processes according to what the claimant is now entitled to
Marketing: will need to produce the new literature
Sales: may need to target different markets
IT: may need changes to systems to record the new treatments
Product design/pricing: will need to assess the cost of any changes and price this into the product rates
Reserving: will need to ensure sufficient reserves are held to cover any additional cost of benefits and adequate capital
Customer service: will need training to give the correct answer to any customer queries
Accounting: may need to deal with new preferred suppliers, and process any invoices correctly, tax considerations
Underwriting: will need to assess if any changes to underwriting are required – for example, history of use of alternative medicine may become relevant at underwriting.
Actuarial: monitor experience
Compliance/legal/internal audit/risk management: need to review policy literature and ensure company is meeting TCF requirements, assess additional risks incurred and may need to update management

(iv) Provide access to pain management experts, e.g. chronic pain clinics and to advisers in how to manage back pain, e.g. advice on correct posture for sitting at desks all day. Provide access to physiotherapy or other treatment, such as

acupuncture, to attempt to alleviate the back problem and access to other activities deemed beneficial, e.g. swimming

Provision of equipment to improve back pain – e.g. special chair for sitting at desk, exercise equipment, expensive mattress etc.

(v) First, need to isolate which benefits would be additional to what would have been paid before – some would already have been covered, then need to estimate costs of those benefits that are additional, e.g. costs of therapies, costs of equipment

This may be done on a bottom up basis using experience of administration expenses, plus information from providers regarding costs of therapies etc and checked using a top down basis – by comparing with costs of similar benefits. Identify rating factors to be used (e.g. age, sex) and split data by rating factor

Assumptions would also have to be made regarding the relative take-up rates for the different types of pain management benefit that could be provided and will need to estimate the possible duration of ongoing treatments e.g. number of physiotherapy or acupuncture visits

Need to estimate frequency of claims, taking into account the fact that if this is marketed as a special feature, there will naturally be a high degree of anti-selection involved

Data will be difficult to obtain for these estimates. The NHS publishes data on back pain but this is a different population. Reinsurers may be able to provide assistance

Any other costs involved, such as changes to literature, would also need to be factored in. Expected additional new business volumes would need to be estimated in order to ensure that these one-off costs are expected to be recouped over a reasonable period, say a couple of years

Allowance for expected renewal rates would be needed

Cost of claim expenses, reinsurance costs, etc. The costs should be incorporated into the existing pricing model and the model rerun

There should be a margin added to the resultant premium rates for the risk of mis-estimation. However, if the marketing director is keen to increase the amount of volume sold, it may not be appropriate to make a large increase to the premium

A range of premium rates should be produced, and likely volumes sold at each of those rates and therefore overall total profit estimated, for the insurer's management team to consider

The rates could also be compared with competitors' rates but this is likely to be difficult given the relatively small number of PMI providers in the UK and this being just one additional benefit which cannot be isolated

In part (i) candidates seemed unable to generate a wide range of approaches, even though many of the solution points are fairly standard ways of providing additional benefits. In part (ii) candidates generally did not demonstrate a good grasp of the differences between alternative and conventional treatments. At this level, candidates should expect to have to apply general knowledge and understanding of the different types of treatment and benefits covered by the syllabus.

Many candidates scored well in part (iii). However, part (iv) was surprisingly not as well answered; consideration of the types of things which would be helpful to alleviate or manage back pain would have provided several suggestions.

Part (v) was relatively straightforward but the answers did not necessarily reflect that. Many candidates missed out the first step of considering what alternative benefits were already provided under the policies. It may be that perhaps some candidates had time management problems.

END OF EXAMINERS' REPORT