INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2010 examinations

Subject SA1 — Health and Care
Specialist Applications

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

T J Birse
Chairman of the Board of Examiners

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General comments

Candidates who approached the questions, especially the more substantial elements of each question, in a methodical and detailed manner were far more likely to satisfy the examiners and receive a pass in the subject. Candidates will gain few marks if they do not address the question asked. 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. In general each valid point in the answer would normally attract 0.5 marks with the more basic elements e.g. details in a pricing basis such as age and sex, attracting 0.25 marks.

It is often helpful to use subheadings when answering long part questions.

Some papers were not clearly marked at the top of each page as to which part of the question was being answered.

Marks may be lost where answers are difficult to read.

Comments on individual questions

Question 1
TCF is an extremely important concept throughout the insurance industry in the UK. Therefore it was a source of concern that very few students were able to tackle (iii) confidently. Apart from that, the question was well answered and most well prepared candidates had little difficulty.

Question 2
The stronger candidates were able to make a good attempt at this question. It should be noted that worksite marketing is only suitable for large workplaces and would not be a likely distribution route for this product. The candidates who scored most highly were those who were able to make a wide range of points, covering many different areas. Time spent brainstorming in advance would have been well spent.

Question 3
Candidates should note that the regulatory environment is important knowledge for any actuary, and since SA1 is a UK specific examination then knowledge of the UK regulatory environment is critical to success. Many candidates appeared not to have the required knowledge and/or understanding of the Core Reading to enable them to answer this question successfully.

1 (i) Possible products for which the riders could be offered:

(a) Funeral cover could be offered with an Immediate Needs product, because these people have relatively short life expectancy and they may therefore be already thinking about funeral planning, (so it will meet their needs and be appreciated)

(b) Gym membership could be offered with PMI because this would increase the fitness of the insured, reducing the cost of claims/people taking out PMI may be conscious of their health and fitness so may value a gym membership

(c) Dental cover could be offered with a hospital cash plan, because people who value getting cash for a hospital stay may also value being covered against costs of dental care

(d) Retail discounts could be offered with any short term lost cost product such as Optical plans. The discounts may be valued by low income sectors of the population, and so may match up with the people taking out these products.

Credit was given for other sensible suggestions.

(ii) The major objective would be to sell more business by making the policies more attractive or increase retention and hence make more profit. In order to achieve this, the riders would have to be offered with an appropriate product. For example, the funeral cover is unlikely to be popular if it is added to a product with a young target market.
The insurer may have to offer riders if competitors offer them or if distributors demand them. Alternatively, they may be seeking to find a unique selling point for the underlying product if the market is very competitive.
The insurer may wish to increase brand awareness.
Riders may be offered in order to improve the strategic fit of the product to the company, e.g. they may alter the target market to be closer to the sector generally targeted by the company.
The rider may be a way of ensuring the product meets customer needs. (Note however that under (a) above the rider is unlikely to provide an indemnity and hence would not fully meet needs) or it may help to allay customer fears (e.g. in the case of the funeral plan).
The rider itself may be priced profitably, and hence increase the profit made per policy. However, this is unlikely to be the case for all of these riders; for example (b) will only be attractive if it saves people money on a gym membership, so unless the company can do a very good deal with a gym chain, it's unlikely to be profitable in its own right and under (d) policyholders would only be prepared to pay less for this than they expect to save when using the discounts, hence it is also unlikely that this would be profitable to the insurer.
Riders may be cheaper to offer than as stand-alone products due to lower expenses and possibly less anti-selection (dental and funeral riders).
There may be a statutory requirement to offer something like this.

A rider may be offered because it reduces claim costs. For example, gym membership may reduce claim costs if it increases fitness. Dental cover could in a few cases reduce claim costs if it prevented a dental problem from escalating to the point where it required surgical intervention but this would be unusual.
The insurer may wish to build up experience in order to offer stand-alone products

(iii) Whether the riders meet a genuine customer need
Whether the riders are fairly priced
Consider the sales process for the riders and whether the sales team fully trained
Whether inappropriate pressure is applied to take the rider
Whether the commission is appropriately structured to make the rider saleable but not inappropriately profitable for the advisor
Whether the marketing material is clear fair and not misleading and whether the terms and conditions for the rider are clear, fair and not mis-leading
Whether customers have adequate chance to change their minds
Whether the rider is a good fit to the main product
Whether there is overlap between the rider and the main product – are the customers being sold something they already partially have?
Whether there would be any impact on the underwriting process
Whether it is clear what restrictions apply – e.g. which gyms can the customer be a member of
Consider whether the retail vouchers constitute an encouragement to get into debt.
Differential pricing would need to comply with any equality legislation
Would need to consider fairness to existing policyholders who missed out on the opportunity
Riders must be clearly optional
Make clear additional commission paid for rider

(iv) An investigation of the cost of the gym membership is reuired. Hopefully a bulk deal with a major brand of gym in the territory would be negotiated. Then need to determine what the cost varies by; these would become the “risk factors” for the pricing model and be used to formulate the rating factors. A table could be produced that shows the cost of the rider by rating factor which may then decide to simplify the price of the rider for marketing and admin reasons. For instance, gym membership may vary with postcode but may not want to do this for marketing purposes. However, take up may be highest in areas where gym membership is most expensive.
An assumed mix of policyholders is needed if the pricing is simplified eg by location. Similarly the extra cost of administration may not be recouped by the increase in accuracy. An assessment as to whether the gym membership would affect any of the assumptions in the pricing of the main product is also needed; for example, whether gym membership links to cost of claims – e.g. fitter people making less claims… but only if people actually go to the gym. Conversely, gym members having more claims due to sports related injuries.

Any effect on the claims rates for the main product, allowing for the fact that some already go to a gym needs to be quantified. If this is material, a deduction to the cost of the rider can be allowed for the savings in claims.
A profit criterion would need to be identified. Bigger margins may be needed. This could be a profit making rider or if it is being used for marketing reasons to increase sales, it may be offered at cost or even at a loss (as long as the main product is still profitable on a fully-costed basis).
The cost of the insurer administering the rider and any commission paid on it would need to be loaded.
An assumption on expected volumes would be required in order to price eg to spread overheads. May price assuming future renewals in order to spread overheads. In this case a full cash flow projection would be needed and the profits discounted.
The overall price would be compared with what individual would have to pay for gym membership.
Sensitivity tests would be performed e.g. assuming different business mix.
May need to increase margins if higher risk/sensitivity.
Look at competitor pricing if it exists – e.g. in the UK, one company offers gym membership with its PMI, and one offers retail discounts.

2 (i) Advantages include:
Simple
Cheap
Short time to issue and little hassle factor
Appropriate for the level of premium and income
Clearly worded questionnaire should reduce risk of non-disclosure of pre-existing conditions
Avoids anti-selection from those with a current work-related condition
May be appropriate as we have pre-selected a population who should be in good health

Disadvantages include:
Reputational risk due to claims related to pre-existing conditions being declined
Risk of incorrect pricing due to limited form of underwriting and therefore need to add margins
Risk that in order to capture all the necessary information the form becomes long and complicated
Increased risk of moral hazard as people can easily lie on an application form
Increases claims underwriting
May be confusion or lack of clarity about what is a "work-related" condition

(ii) Possible rating factors include:
Sex
Age
Deferred period
Type of gym instruction carried out
Years of experience
Whether instruction is completed by verbal cues or demonstration

Type of sports taught
Hours per week worked
History of work-related injuries
Whether any martial arts are taught
Distributional channel

Credit was given for other sensible suggestions

(iii) The product is simple and low cost so low cost options are appropriate
Non-advised sales should be adequate for this simple product
Will want to target the appropriate population
Advertising and inserts in gym trade magazines
Gym instructor website advertising
May be able to sign up with professional bodies to buy their mailing lists

No credit was given for the suggestion of sending sales force out to gyms

(iv) Morbidity risk: gym instructors have to be fit and well to work and so they may claim on relatively minor injuries leading to a high frequency of claims.
It is difficult to predict claim rates as this specific data is unlikely to exist.
There may be reputational risks if the product is not well understood, in particular:
the pre-existing conditions clause may not be understood well at point of sale.
the exact definition of unable to work will be defined, but this may not be examined fully at time of purchase.
the definition of work-related injury may not be clear, and may be open to moral hazard.
There is a risk of non-disclosure of pre-existing conditions.
The premium may be high relative to the benefit payable. This introduces both volume risk and risk of high non-renewal rates and there are likely to be selective non-renewals as it is a new product launch there is risk of not selling sufficient volumes to recover the development overheads.
Competitors may issue a similar product and undercut the company.
If there are cross-subsidies, this introduces mix risk – in particular, some sports may be more hazardous than others but it may not be possible or practical to adequately reflect the variation in the rating factors, even if the data were available.
Anti-selection risk – those people who thought they were more likely to claim would naturally be most likely to take out the product and these may be difficult to identify from the limited underwriting.
As this is likely to be low value business, the risk of higher than expected expenses is more significant for the insurer than with higher value products and as this is a new product there is an additional risk of mis-estimating other pricing parameters such as expenses and renewal rates.
Potential moral hazard if earnings less than £100 per week.
Potential for fraud.
Risks of higher payouts than expected as unlikely to have many checks as benefit level is low.

(v) **Profitability:**
Whether the product would be profitable. Need to carry out profit testing to determine a premium that meets the profit criterion
Need to investigate the expenses for the product – can be high for a low premium-low benefit product like this. Need to estimate sales expenses, e.g. cost of leads, based on a similar product – if there is one. Similar may mean direct marketed, or may mean low benefit Income Protection. Alternatively carry out a bottom up estimate – would need to estimate time to process the applications, time to service claims, etc. There could be large numbers of small claims.
Need to estimate claim rates which is tricky, given lack of data.
Need to estimate the possible renewal rates, again based on a similar direct marketed product if possible and given the high levels of uncertainty (identified in (iv)), need to allow generous margins for prudence.
Also need to allow fully for reserving, so need to investigate what would need to be held, including any capital requirements.
The total development costs and whether they can be covered.
Investigate what contribution to overheads would be required, for a small product like this, the overheads could be disproportionate.
Also need to perform sensitivity and scenario testing and put the product into a full model office to see the full effect, e.g. on solvency.

Marketability and saleability:
At that premium, would the product be saleable
Is there a market for this product, e.g. are there enough gym instructors, and do they want the cover. Consider current economic conditions when trying to assess the potential market.
Find out whether there are there competitor products; if not, then why not? If so, then is the market saturated? If there are competitor products, is the premium competitive?
Look into the requirements for literature, and make sure that all the regulatory constraints could be met without excessive cost or without making the product look too unappealing (if there were a lot of disclaimers needed about not claiming for accidents not incurred while instructing).
Consider if the level of cover is appropriate (compared with what a gym instructor might earn, for example) and in line with the market.
Look into whether the company has any similar products, and whether there would there be cannibalisation or does the product complement them. In particular, how does it compare with the company's standard IP product?
Is the product in line with the company's brand and strategy?

Other financial:
Reinsurance would be desirable for the technical assistance it would bring. Is reinsurance available? Estimate the cost of reinsurance and determine whether the cost brings the profit down too much.
Investigate the level of cross-subsidies needed to make the product marketable – e.g. the sports involved might have a great effect on the claim rates, but that level of rating might not be possible.
Whether the terms on renewal are guaranteed and, if so, does this create an onerous guarantee that we would need to reserve for? (E.g. do we have to

keep rates consistent with what we launch with? Do we have guaranteed acceptance on renewal even for the most accident prone instructors?) If not, would need to take into account requirements to treat customers fairly.
Whether there is enough capital available to meet any financing requirement, although this is likely to be relatively small, considering the likely low volumes.
The company needs to consider any tax implications.

Practicalities:
Consider what systems are available – is there already something in existence for such a product. Would we need to buy a new system, or could we build on one we already had?
The costs and time involved.
Staffing: investigate how many staff would be needed, whether the appropriate skills are available (do the staff need sports knowledge, or income protection knowledge)?
The company would need to determine an appropriate claims management level. Whilst a limited approach to assessing claims would manage costs, there would be a greater chance of fraud.
Are there any regulatory constraints; are we allowed to sell such a product (are our rating factors acceptable, or do they represent discrimination)
Need to firm up on the details of the product. What kind of gym instructor would this be open to? (E.g. personal trainers, people who teach step classes, swimming teachers, football coaches, leisure centre staff…). Exactly what would be covered by the policy (i.e. when would a claim be valid – what if instructors were engaged in their own workout, but at their place of work).
Need to have very clear and tight policy wording and terms and conditions.
The company also needs to decide an appropriate deferred period. This is likely to be short, perhaps a two week deferred period combined with the option of “back to day one” cover.
What distribution channels to use and what commission/incentive to offer.
Should an NCD be offered?
Are there alternative products/projects with a higher return on capital.

3 (i) Maintaining **confidence** in the UK financial system
Promoting **public understanding** of the financial system
Protecting consumers
Reducing the incidence of **financial crime**
To contribute to the **protection and enhancement** of the UK financial system

(ii) Reporting to the FSA is based on the concept of two Pillars:
Pillar 1 covers public solvency information that appears within the FSA Returns

The results are calculated on the basis of prescriptive rules for the valuation of both assets and liabilities and for the determination of additional capital requirements

Resilience Capital Requirement (RCR)
Long Term Insurance Capital Requirement (LTICR)
General Insurance Capital Requirement (GICR)
Base capital Resources Reuqirement (BCRR)

Resilience Capital Requirement (RCR) is calculated as the capital shortfall arising in the assets hypothecated to back the long term liabilities as the result of a series of market risk scenarios specified by the FSA.

Long Term Insurance Capital Requirement (LTICR) is defined as the sum of the insurance death, health, expense and market risk capital components.

General Insurance Capital Requirement (GICR) is defined as the highest of the premiums amount, the brought forward amount and the claims amount.

The Base Capital Resources Requirement (BCRR) is the minimum amount of capital that must be held in accordance with EU Directives

The return comprises a large number of forms, containing very detailed financial information about the insurer. This information is available to the public and any person has a right to request a copy from the insurer. This availability means that competitors, journalists, brokers and many others have access to an insurer's detailed financial information. Production of the FSA Returns is mandatory on an annual basis.

Pillar 2 is the Individual Capital Assessment ("ICA"). This is a confidential assessment of solvency for FSA. It recognises all the risks to which a firm is exposed, not just the prescribed risks of the Pillar 1 rules. There are no prescribed rules or stress tests but there is an expected benchmark calibration of a minimum probability of solvency of 1 in 200 over one year or equivalent.

Examples of the risks that a firm should assess under Pillar 2 are as follows:

Market and interest rate risk
Credit risk (including reinsurance risk)
Operational risk
Mortality and morbidity risk
Persistency risk
Expense risk
The risks attaching to the firm's pension scheme
Liquidity risk
Group risk

There is no prescribed timeline for production and submission of Pillar 2 results to FSA although such calculations are expected to be carried out no less frequently than annually.

The FSA reviews the ICA submitted and issues Individual Capital Guidance ("ICG"). If the FSA is happy with a firm's ICA calculations, the ICG will simply equal the ICA. However, if the FSA believes that a firm has not adequately assessed all the risks to which it is exposed, it will set the ICG as higher than the ICA.

The FSA also expects companies to be able to demonstrate that the ICA and related risk management processes are well embedded in the business

(iii) The FSA handbook states that "a firm must pay due regard to the interests of its customers and treat them fairly". The responsibility for satisfying the TCF requirements rests with the Board and senior management.

The FSA expects senior management to incorporate their approach to treating customers fairly into their firm's corporate strategy and to support delivery of the strategy with an appropriate framework of controls. Effective delivery will include ensuring that the firm:

Has in place a process to identify the needs of the customers for whom they are designing, manufacturing and/or distributing products

Understands the financial capabilities of its customers and the impact and effectiveness of its communications on their ability to understand sometimes complex issues

Provides clear, fair and not misleading advertising, marketing and disclosure materials as well as communications after the point of sale

Maintains a balance between increasing sales and not exposing customers to inappropriate risks, particularly in the design and marketing of new products

Measures, monitors, controls and reviews the risks arising from products for both existing and potential new customers

This includes dealing with current changes in the economic or market environment as well as stress testing against possible future changes in the environment

Finds a way to "stress test" possible risks to the firm arising from its retail business taking into account product types, sales methods and after sales requirements

Puts in place appropriate control functions to enable delivery of the strategy

Provides timely, informative and relevant management information to monitor the effectiveness of the strategy

Six consumer outcomes have been defined, which explain what the FSA wants TCF to achieve for consumers.

Outcome 1: Consumers can be confident that they are dealing with firms where the fair treatment of customers is central to the corporate culture.

Outcome 2: Products and services marketed and sold in the retail market are designed to meet the needs of identified consumer groups and are targeted accordingly.

Outcome 3: Consumers are provided with clear information and are kept appropriately informed before, during and after the point of sale.

Outcome 4: Where consumers receive advice, the advice is suitable and takes account of their circumstances.

Outcome 5: Consumers are provided with products that perform as firms have led them to expect, and the associated service is of an acceptable standard and as they have been led to expect.

Outcome 6: Consumers do not face unreasonable post-sale barriers imposed by firms to change product, switch provider, submit a claim or make a complaint.

(iv) **Health & care insurance products in the UK, including**
Types of product sold
Should investigate both long term and short term insurance types
Total volumes of each type of product sold (premium income)

Product design
Excess levels
Hospital bands
Claim definitions
Definitions of diseases/conditions/*standard exclusions*
Options and guarantees

Pricing
Morbidity rates
Both claim inceptions and terminations (where appropriate)
Also (for PMI) average claim amounts
Mortality
Persistency
Expenses (initial, renewal & claims). Per policy expense will also depend on expected sales volumes (for each product type)
Expense inflation
Claims amount inflation
Commission levels (initial & renewal)
Investment returns
Whether there is relevant market data available to set each of the above assumptions
Profit criteria such as net present value, internal rate of return and discounted payback period
Projections of expected total profits that can be generated from the business
Sensitivity of this profit to changes in key assumptions

Risks
Whether it will be appropriate to use the same risk discount rate as for current pricing (this will depend on the inherent risks within these products relative to current operations).
The extent to which the key risks (e.g. morbidity fluctuations) differ from those in their own country.
Exchange rate volatility: the value of the £ relative to the company's domestic currency will impact the value of profits repatriated to the company's shareholders.
Investigate the extent to which this can be hedged, and the related cost.

Market conditions
Existing players in the market
Competitive position. e.g. respective market share of the top 5 providers
Total current market size
Total potential market size
Annual growth in market size over the last, say 5 years
Barriers to entry

Consideration of easier ways to enter the market, such as partnering an existing UK company
Price elasticity
Brand loyalty
Investigation of premium rates offered by competitors
Investigate the success or otherwise of other overseas companies health insurance operations in the UK

UK State benefits
Benefits provided under the National Health Service (NHS)
Relative coverage of health and care services between the public and private sector
Investigate potential future changes in the degree of public provision

Operational & infrastructure
Underwriting practices
Claims management practices
Availability of admin systems
Availability and potential costs of outsourcing
Availability and potential costs of reinsurance
Possibility of reinsurer providing pricing, underwriting, claims and financial assistance
Availability of quality staff (numbers and competence)
Availability and cost of property
Availability of existing UK market expertise within the company

Capital requirements
The company needs to assess initial development costs as well as ongoing costs
It will need to assess the start-up capital requirements
It will need to decide how to raise the capital required, if it does not have surplus immediately available
The company will also have to project ongoing capital requirements to assess whether future injections will be required
Availability of parental support

Investment
Types of asset available
Asset-liability matching requirements and strategies

Sales
Types of distribution channels used
Volumes sold through each type of distribution channel
Quality of distribution channels
Extent of synergies with existing distribution model
Commission structure

Taxation framework
Corporation tax
Policyholder tax

Value Added Tax
Insurance Premium Tax
Any additional tax payable on repatriation of profits to the head office, e.g. withholding tax, double taxation

Other
Alternative investment options e.g. establishing in a different country, with higher shareholder return on capital
Industry standards/best practice guidance (e.g. as issued by the ABI)
Shareholders'/analysts' likely reactions
Societal differences
Legislative differences; e.g. need to comply with equality legislation
Propensity to claim in different countries

END OF EXAMINERS' REPORT