EXAMINERS' REPORT

June 2013 examinations

Subject F101 — *Health & Care*
Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principle Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions.

QUESTION 1

Part (i) was reasonably well answered although many candidates omitted to comment on ease of understanding and also to make a recommendation as requested in the question. Candidates tended to apply their "list" of data sources for part (ii) without necessarily applying it to the question. Some candidates continue to suggest that reinsurers will simply provide data rather than that they would require to participate in the risk.

i. The question asks for advantages, disadvantages and recommendation as to whether to add the benefit.

Advantages include

- A worthwhile addition valued by customers, giving a competitive edge.
- Easily identified by the public, which aids marketability.
- Readily communicable to sales people, which again aids marketability.

Disadvantages include

- Difficult to draft wording for a mental illness addition – increases the risk of disagreement between insurer and policyholder (reputational risk) or higher than expected claims.
- Potential for windfall benefits: likely to be chronic with few acute episodes so insured is able to work with little loss of income.
- There may be some genetic bias in mental health.
- Difficulty in underwriting/exclusion - leading to anti-selection especially if no one else is offering it.
- Good relevant morbidity data hard to find.
- Difficulty in approving claims - no independent test, subjectivity of diagnosis. Risk of a large number of claims repudiated, unmet policyholder expectations.
- Might not be able to get reinsurance.
- Increased benefits would mean increased premiums – this might be problematic in a competitive market.
- Likely to only be added to new policies – this means expenses of change to claims processing, underwriting etc arising from two separate contracts.

Recommendation

Max 1 mark to be given for recommending whether or not the PTS benefit should be added, provided suitable reasons are given to support the recommendation made and recommendation relates to advantages and disadvantages outlined.

ii.

Morbidity/Mortality

Analysis of the company's experience is of no use as this is a new benefit.

Sources

Industry data – only available if others are offering this, or alternatively if PTS is covered on other products such as income protection/PMI
Assistance from reinsurer
Data from overseas – may not be relevant (e.g. differences in crime levels between countries)
Population data – on occurrences e.g. hospital episode data

Adjustments

Published data will probably need adjustment for the particular circumstances of the company and its products. Most importantly population data and industry data for other products may relate to treatment occurrences and not initial diagnosis
Need to consider trends in experience, and awareness of benefits influencing claims.

Rates included in reinsurance terms would probably be followed if reinsurance data are available.
Data from any of these sources will need to be interpreted with care.
Comparison of the proposed target market and that in the data is important.

QUESTION 2

Part (i) was reasonably well answered, although many students ignored the longer-term aspects of preventative care (i.e. that cost savings are not likely to materialise immediately). Students tended to answer part (ii) too narrowly. In part (iii) it was clear that many students did not realise the importance of critical illness definitions – being diagnosed with a condition does not automatically translate into benefit eligibility; clinical criteria need to be met. Part (iv) was reasonably well answered, although candidates tended to describe NHI in simplistic terms (for example, as being "free").

i.

Can be used to encourage healthier lifestyles (e.g. reduce smoking). Preventative medicine through appropriate screenings (such as prostate screenings and mammograms) leads to early detection of conditions, which means more successful treatment, which can save future costs. Preventive care is a long-term strategy intended to reduce claims costs in the future. The State is more likely to have a long-term perspective than a private insurer. May fit in with other health policy objectives.

ii.

Stop smoking
Only current smokers are eligible
NHI – therefore not concerned about anti-selection
Should reduce costs in the long term
Likely to fit in with other national health objectives
Programme may not be successful (need to assess success rate to evaluate cost/benefit)
May impose criteria e.g. length of time smoking and other measures failed
Probably more appropriate to arrange for a discount
Monitoring/adherence to programme important
Participants may not take programme seriously if it is free

Mammograms
Very effective screening for breast cancer
But expensive
Need to focus on higher risk cases
E.g. by age
And family history
Need to consider equity with screening for other cancers e.g. prostrate
Need to cover medication and treatment if identified (so cost/benefit not only about the cost of test but also cost of treatment)

National Health Insurance – marketability and competitiveness are not important.

iii.

Increased access to screening will mean an increased probability of detection, and particularly of early detection. The impact on critical illness will depend on the benefit definitions. In general, increased detection should mean increased claim rates (as claims are diagnosis driven). However, the impact will depend on the definitions used in critical illness products. Increased early detection and

successful interventions may mean that policyholders do not mean critical illness definitions (i.e. treated before diagnosis severe enough to trigger benefit).
With tiered benefits it will be more likely that the lower tiers will be triggered. This may have the effect of reducing overall claim payouts.

iv.

CI insurance is a pure protection product with the sum insured payable if the policyholder suffers one of the insured conditions during the term of the policy. Critical illness benefits are paid in the form of a lump sum usually and are not designed to indemnify the policyholder.

The insured event is usually specified in terms of causes, *eg* a list of illnesses or medical conditions that lead to the payment of the sum insured. However, sometimes cover is extended by the use of an outcome event, *eg* total permanent disablement whatever the cause. So the cover is much more restricted than that provided by NHI.

In this way, critical illness is unlike NHI which is specifically designed to meet direct medical costs incurred as the result of the insured event occurring.

Although NHI seeks to indemnify those covered, it will not usually cover *all* medical costs, usually due to affordability constraints. These costs are referred to as "out-of-pocket expenses".

National Health Insurance is likely to be based on solidarity principles (premiums not based on risk and losses paid according to need) whilst critical illness cover is likely to be based on mutuality principles.

QUESTION 3

Poorly answered. Candidates did not make full use of the information provided in the question. In particular, many candidates ignored the company being in run-off. No marks were given for mentioning factors external to the insurer as the question specifically asked for internal factors.

- Company in run-off so has no ongoing premium income to fund current liabilities therefore will need to ensure appropriate liquid assets are available to meet these liabilities.

- Expenses and overheads will become more significant as the business runs off

- Company will maximise investment return subject to meeting its risk appetite – risk appetite may differ from that of larger insurer

- The level of mismatching possible will be subject to free reserves

- Many claim payments are likely to be in US Dollars so need to ensure appropriate matching by currency.

- Long-term care liabilities generally long term. Length of term will depend on product design (e.g. prefunded or not). Longer term assets may be an appropriate match for these liabilities.

- The claims are likely to be subject to material levels of medical inflation if product offers indemnity cover.

- Company is small so wouldn't expect significant investments in asset classes like property.

- Consider relatively straight-forward (or outsourced) portfolio as less expertise may be available in-house to manage investments as the company is likely to be winding down staff numbers as has been in run-off for some time.

- Small company will need to adhere to any investment policies that are set by the group

- Extent of any additional funds that are available to the small company from the group.

- Knock on effects on the group position (e.g. tax efficiencies, diversification)

- Extent of reinsurance in place

- Long-term care reserves will be discounted so need to ensure that return from investment portfolio continues to supports discount rate chosen√ (or amend discount rate to reflect investment return achievable).

QUESTION 4

In part (ii) most candidates did not relate the solution to PMI business. Discussion of free cover limits related to salary and financial underwriting are inappropriate in the context of indemnity cover. Solutions for part (iii) tended to be naïve in terms of the difficulties associated with quantifying potential savings.

i. Underwriting is a process used by insurers to decide how risky an applicant for insurance is and what premium should be charged.

ii.

Large Group:

- There needs to be a definition of what constitutes a large group
- Will require cover to be compulsory in order to waive underwriting requirements ("medical history disregarded" i.e. no exclusions for pre-existing conditions)
- The health status of the actual *individual* members of a group scheme is not taken into account (may be a free cover level but less likely for medical expense business).
- Rather, a more global view is taken in assessing the expected experience of the group as a whole – e.g. demographics and prior experience.
- Some lives in poor health may be accepted because they will be balanced out with lives in good health.
- Account may, however, be taken of the actual experience of the group and an "actively at work" requirement may be imposed.

Small Group:
More likely to be underwritten as individuals but less rigourous than individual underwriting
Waiving of underwriting may be considered for compulsory membership

Individuals:
Scope for anti-selection
Full medical underwriting likely
Will collect individual medical questions
May load, exclude or decline
There may be restrictions on the extent of underwriting allowed.

iii.
Discount needs to be justified on the basis that having programme will lead to lower claims costs.
Need to do research to justify whether this is the case.
And the extent to which claims are lower.
There is great variation in what different employers offer (e.g. health assessments, stress reduction programmes, access to preventative measures/screening, voluntary testing and counseling for HIV, health awareness programmes)
Need to consider different types of programme and key criteria to be met
Level of discount likely to be low as evidence is limited
So it is more of a marketing initiative
May have financial benefits in terms of renewal
Needs to be priced for explicitly

QUESTION 5

Candidates tended to provide vague descriptions of investigations for part (i) instead of focusing on key areas such as claims, membership and expenses. Part (ii) was generally well-answered although some candidates did not describe the savings account structure and associated transfer of risk and so they missed some easy marks. Part (iii) was well answered where answers were complete.

i.

Investigations need to include:

- Covered lives
  - Investigate whether there has there been a change in demographic profile
  - A change in volume would not affect only two categories of benefits
  - Change in benefits relative to competitors can lead to anti-selection
- Marketing and communication
  - Investigate whether there has there been a change in the way in which benefits are communicated to policyholders
  - For example, preventative dental care may be encouraged to reduce down-stream costs, and post-operative physiotherapy may be encouraged to improve recovery times
  - There may therefore be increased awareness of these particular benefits
- Change in tariff or mix of providers
- Risk management
  - Investigate whether there has there been a change in the way in which benefits are managed e.g. Limits on out of hospital benefits may have been increased, or pre-authorisation may be granted more easily than previously.
- Claims experience
  - Collect data on the dental benefits and investigate changes in proportion of beneficiaries claiming (frequency) and amount per claim.
  - Collect data on the physiotherapy benefits (frequency and amount)
  - Consider in and out of hospital separately
  - Are there specific providers with high claims
  - Analyse by procedure code
- Is there evidence of fraud?

ii.

- A portion of premium is paid into an account for the exclusive use of the member.
- Member can only use what is in the account and any excess is carried forward
- So there is no cross subsidy between high and low claiming members
- member can only claim what is in the savings account so there is no risk to the insurer in terms of higher claims
- So will be effective in limiting exposure to higher costs
- Also discourages over-utilisation of benefits - policyholders treat funds as their own and are more careful
- But member needs to understand limitation to own savings
- May have genuine need for care
- Level of amount going into savings needs to be reasonable
- Likely to be lower than current annual limit because of cross-subsidy mechanism being removed
- Savings probably not appropriate for in-hospital benefits as cost per event can be large and events are infrequent
- Major dental reconstruction may also need to be provided for separately
- Need to distinguish more discretionary elements of care

- Needs to be clearly communicated so members can manage their expenses, and provide support.

iii. Only mark two

- Can impose limits on benefits
    - Need to analyse experience to see what level of limit appropriate
    - Limit likely to be lower than that current benefits
    - Consider how many people would be impacted (and which people i.e. those most in need)

- Use of co-payments or co-insurance
    - Cost sharing may mean less likely to abuse
    - Needs to be at level that is not too high to prevent access to care
    - Or too low to not have desired effect

- Can use risk management e.g. pre-authorisation
    - More appropriate for less frequent events
    - Cost of implementing needs to justify savings
    - Need to have evidence-based clinical protocols

- Can use preferred providers
    - Identify providers with favourable practice
    - Contract on basis of price and protocols
    - Could combine with better benefits in the network to encourage use of network providers

- Exclude benefits
    - More discretionary elements of care
    - Policyholders self-fund out-of-hospital benefits
    - Need to consider down-stream costs (more serious dental problems, slower recuperation without physio)

QUESTION 6

Part (i) and (ii) were surprisingly poorly answered for bookwork questions.

i.
In a risk-based environment, the amount of the solvency capital requirement will reflect the risks affecting the insurer by calculating a risk-capital charge for the various aspects of the insurer's business.

The amount of the risk-capital charge is usually determined by multiplying the value of the risk element (*eg* premiums, reserves, sum at risk or value of assets) by a risk factor.
Higher risk factors are assigned to riskier aspects of the business. This means that assumptions need to be made regarding the risk for various aspects of the insurer business *eg* asset risk and insurance risks, and the resultant appropriate capital charge.

ii.

Risk	***Examples of risks***	***Examples of risk-capital charge (broadly based on US system)***
Insurance risk	Risk of underestimating liabilities from business already written or inadequately priced business to be written in the coming year	Premium underwriting risk charge: Premium × Claim ratio × Risk factor (Comprehensive medical cover risk factor is 15% for premium less than \$25*m* and 9% for premium in excess of \$25*m*)
Asset risk – affiliates	Risk of default for affiliated investments	
Asset risk – other	Risk of default of principal and interest or fluctuation in market value	Asset risk charge: Balance sheet value of asset × Risk factor (Risk factor for bonds ranges from 0.3% to 30% depending on its credit rating)
Credit risk	Risk of recovering receivable amounts from creditors (*eg* reinsurers, Managed Care Organisations (MCOs))	Credit risk charge for reinsurers: 0.5% of recoverables, unearned premiums and reserve credits
Business risk	General business risk, including administrative expense risk and excessive growth risk	The health administrative expense risk-capital charge: Premium × Risk factor (Risk factor is 7% for premium less than \$25*m* and 4% for premium in excess of \$25 *m*)

iii.
The total amount of risk as well as the categories of risk faced will differ between products.

Insurance risk – lower for short-term business where there is the opportunity to increase rates. Higher risk for indemnity business√ and where there is exposure to medical inflation.

CI – long-term therefore uncertainty around the incidence of various conditions but sum assured is known. PMI- short-term reduces risk, but indemnity cover so risk of claim frequency and severity being higher than expected. LTC – high risk in terms of term and possible indemnity cover, high likelihood of antiselection.

Asset risk – higher for categories with a larger reserves i.e. long-term business. For CI business will depend on whether sold as a rider benefit or separately. Assets for PMI tend to be short-term and relatively low risk.

Credit risk – all product types will have similar associated creditors e.g. reinsurers. PMI – more likely to have managed care organisations as creditors - These will not be regulated as tightly as reinsurers are so risk may be higher.

Business risk – similar elements for all product types except that CI products have fewer claim payments per policy than PMI in particular, and LTC to some extent. Greater risk associated with claims administration for these two product categories.

QUESTION 7

Solutions tended to be excessively generic and not related to the specifics of the question. In part (i) students were not rewarded for providing the advantages and disadvantages of reinsurance in general as the question related specifically to quota share. Part (ii) was very poorly answered and demonstrated generally poor understanding of the economics of supply and demand

i.
The advantages of quota share to a direct writer are:
● helps spread the risks, reducing parameter risk in particular
● there might be some reciprocal business from the reinsurer
● administratively simple
● used for financing new business strain

The main disadvantages to an insurer of ceding business by quota share are:
● it cedes the same proportion of each risk, irrespective of size; the insurer may, however, wish to cede a greater proportion of the larger risks than the smaller ones, owing to their greater loss potential
● it passes a share of any profit to the reinsurer.

ii.
Possible reasons

- Many of the risks associated with long-term care cover will affect reinsurers as well as direct writers – max 2 marks for examples: risk of anti-selection, longevity risk, uncertainty associated with long-term nature of cover, additional risk associated with indemnity products, selective lapses.
- Low volumes of long-term care business sold by direct writers – difficult for reinsurers to diversify risk and to have a sufficiently large pool.
- Poor past experience.
- Preference for short-term reinsurance contracts.

Implications for insurers

- Decreased ability to manage risks exposed to.
- Lower volumes of business that can be written.
- Increased capital requirements from other sources.
- Barrier to entry for new competitors.
- Increased price of long term care cover to policyholders (due to increased capital costs or margins to compensate for reduced reinsurance).
- Other risk management interventions e.g. using benefit design such as reduced limits.
- Increased cost of cover that is available (less competition).

QUESTION 8

This was the weakest area of performance on the paper. Part (i) was marked generously with allowance for variations in assumptions made. A significant number of candidates did not read the question properly and did not realise that the table represented cumulative claims. Candidates appear to have been thrown off by the slight reduction in cumulative claims between lag 4 and 5 – this is common occurrence in reality due to corrections/reversals/recoveries. In part (ii) most students simply stated that PMI is short tail with no further explanation. Part (iii) demonstrated a general lack of understanding of the B-F method with most candidates calculating the ultimate loss based only on the loss ratio (i.e. ignoring claims that have been paid to date).

i.

Calculate development factors

0-1	1.415
1-2	1.130
2-3	1.032
3-4	1.001

Calculate ultimate development factors

	f
0	1.650
1	1.166
2	1.032
3	1.001

Calculate paid claims and ultimate loss

	Paid Claims	Paid claims * f
January	4,330,000	4,330,000
February	3,960,000	3,960,000
March	5,150,000	5,153,106
April	5,775,000	5,962,596
May	4,800,000	5,598,181
June	4,250,000	7,011,949

ii.
PMI claims are fully run off very quickly, particularly with electronic claim submissions and adjudication. The vast majority of claims may be settled within this time frame. However, it is unlikely that all claims are settled that quickly. For example, with large hospital claims the lag time is likely to be longer. There may also be claims where it is unclear whether the insurer is liable or not (e.g. workplace injuries) that may take longer to settle.

iii.

Calculate expected claims

	Expected Claims
January	4,750,000.00
February	5,225,000.00
March	5,700,000.00
April	6,650,000.00
May	7,125,000.00
June	7,600,000.00

Calculate outstanding claims using 1-1/f (from part i) and add to paid claims

Ultimate development factors	Outstanding proportion	Outstanding Claims	Ultimate Loss
1.000	0	0	4,330,000
1.000	0	0	3,960,000
1.001	0.001	5,700.00	5,155,700
1.032	0.031	206,150.00	5,981,150
1.166	0.143	1,018,875.00	5,818,875
1.650	0.394	2,994,400.00	7,244,400

iv.
The loss ratio is unlikely to be constant across months because of claims seasonality. Premiums will be level but expected claims will vary from month to month.

v.
Additional information

Claims seasonality.
Check against prior year loss ratios (and variation from month to month).
Check against prior year run-off pattern to check impact on assuming January fully run off.
Data subdivided appropriately (E.g. by claims category) to allow for change in mix.
Allowance for reinsurance and claims expenses.
Allowance for inflation.
Choice of method

Will depend on the volatility of the run off patterns – will need to check against previous years to get a sense of this.
The Basic Chain Ladder Method is very sensitive to claims that have been paid already – particularly in month 0 this may be very volatile.
A blended method may be most suitable.

END OF EXAMINERS' REPORT