2010 Examinations

SPECIMEN SOLUTIONS

Subject SA3 — General Insurance

Specialist Applications

1 (i) *Define Lloyd's*

A society that provides a market place and regulatory framework within which individual and corporate members may participate in the underwriting of insurance risks on their own account.

Define London Market

That part of the insurance market in which insurance and reinsurance business is carried out on a face-to-face basis in the City of London.

(ii) *Describe the main features of Lloyds*

Lloyd's does not act as an insurer in its own right and, therefore, carries no insurance risk.
The Council of Lloyd's is responsible for management and supervision of the market.
The Council delegates day-to-day running to the Committee of Lloyd's, who are responsible for administrative matters.

There is statutory actuarial involvement, and a Lloyd's actuary
The FSA regulates Lloyd's, (as well as Lloyd's managing agents, members' agents and Lloyd's brokers).

Members are grouped into syndicates.
Members are known as names.
Names can be individual or corporate.
Corporate names have limited liability.
Most individual names have limited liability…
…and there can be no new unlimited liability names.

Names are represented by members' agents.
Each syndicate is run by a managing agent.
…a company appointed to manage the affairs of the syndicate, appoint the underwriter, and provide technical and administrative services.
Some managing agents are quoted companies listed on the stock exchange, others are private companies.
In some instances, managing agents act as capital providers to the syndicates they manage so have a dual role as corporate members of the market and managing agents.

Business is written through the slip system.
Most policy and claims administration is performed by LPSO/Xchanging
The members of a syndicate share the risks written by the syndicate's underwriters.
However, if a member defaults on their liabilities, the other members of the syndicate are not responsible for them — there is no joint and several liability.
Because of this, each member is required to provide capital ("Funds at Lloyds") as security to support their total Lloyd's underwriting business.
These funds can be drawn on in the event that the member defaults.
The level of funds required depends on the perceived level of risk in the business which they underwrite, and the amount of business written.

The Central Fund is available at the discretion of the Council of Lloyd's to meet any valid claim that cannot be met by the resources of any member.
Compensation may now also be available from the FSCS.

Each syndicate year of account is allowed to remain "open", usually for a period of three years, before a profit or loss can be determined for that year.
During that time, premiums received on business written in the year are accumulated in a fund, out of which claims and expenses are paid.
At the end of the three year period, the fund would usually be closed by estimating the value of the outstanding liabilities and reinsuring them into the subsequent open year of the syndicate.
The reinsurance premium for this is known as reinsurance to close (or RITC).
Once this transaction has occurred, the final result of the closing year can be determined, as can the profit or loss attributable to each member.
If liabilities are particularly uncertain, the year of account may be left open longer than 3 years.

(Almost all) business is written through brokers.
Lloyd's writes all classes of business, in particular special and unusual risks and some business in most countries of the world.

(iii) *Ease of entering market*

Megasure Group could participate in an existing Lloyd's syndicate by just providing capital.

Establishing a wholly owned subsidiary would be more complicated.
…would need to set-up admin processes / do admin
…may not have necessary expertise in house/need to hire staff
…and so this may take more time.

This may also lead to a difference in start-up costs of entering market (that is, start-up costs likely to be lower for Lloyd's).
Risk of entering a new market likely to be greater if start-up costs are greater.

Barriers to Entry
It may not be possible for Megasure Group to join the syndicates it wishes to (they may have enough capital already).
There may not be syndicates that Megasure Group would like to participate in.
As a major international insurance group, there should not be significant problems in obtaining permission to establish a subsidiary.
Should also consider ease of leaving market — may be easier at Lloyd's.

Control
Lloyd's syndicates are run by managing agents, who make key decisions such as appointing underwriters.
The ability of individual names to control the syndicate may be limited (although Megasure Group's influence will be greater if it provides a significant amount of the syndicate's capital).

Megasure could control every aspect of a wholly owned subsidiary, subject only to regulatory constraints.
Megasure may have confidential information that a subsidiary could exploit. If Megasure participated as a name on a syndicate, it may be reluctant to share this with the managing agent.

Access to preferred risks
Underwriters on a syndicate may already be writing the type of business.
Megasure wishes to write.
There may be advantages to writing renewal business on a syndicate than considering risks for the first time at a new subsidiary.
The Lloyd's credit rating may assist Megasure in accessing business.
Lloyd's may give the start-up more credibility than would be attached to a small start-up (value of Lloyd's brand).
Ability to benefit from Lloyd's licences.
Existing Lloyd's syndicates would have links to brokers to access risks, and underwriters may have special relationships.

Diversification
Megasure Group may be able to participate in a number of syndicates, obtaining diversification.

Future strategy
Consider the long term strategy for the European operations. For example, if more lines of business are planned in the future, may prefer to operate a subsidiary.

Regulation
There may be differences in the regulatory requirements that make one option preferable.
There may be differences in capital requirements.
There may be differences in the permitted assets.

Tax
There may be differences in the tax that make one option preferable.
Example of differences.

Expected profitability
There may be differences in the expected profitability that make one option preferable.

(iv) *Definitions of RMM/MCR, ECR, ICA*

RMM — Required minimum margin.
MCR — Minimum capital requirement.
RMM and MCR are different abbreviations for the capital requirement.
RMM/MCR is the greater of the GICR (general insurance capital requirement)/RMS (required margin of solvency) and the minimum guarantee fund (MGF) set by the EU.
ECR — Enhanced capital requirement.
A more risk sensitive measure than the current EU directive minimum.
ICA — Individual capital assessment.

This is a type of capital assessment introduced by the FSA.
Insurers are required to carry out regular assessments of the amount and quality of capital that is adequate for the size and nature of their business.

(v) *Initial capitalisation of MICE*

The MCR/RMM has the force of EU directives, that is, it has the force of law.
This represents the minimum level of capital that must be held.
The ECR is currently only a private reporting requirement rather than a hard test.
However, this is under review / may change in the future.
In any case, the ECR will be used as a basis of discussions between firms and the FSA.

The ICA represents a firm's own assessment of its capital requirements, so it is unlikely it would want to hold less than this.
In practice, it is highly unlikely that the FSA would permit MICE to only hold the MCR/RMM.
The ICA is the largest of the three estimates for MICE, so this is probably the minimum level of capital the FSA would permit.
The FSA will review the ICA and issue individual capital guidance.

ICG will be expressed by the FSA as a percentage of the ECR.
The firm would almost certainly want to hold at least the ICG.
We don't know what the ICG will be until the FSA has reviewed the ICA.
Therefore it is not possible to know with certainty the capital that MICE will need.
We could try to obtain information on ICG from other sources to estimate the capital requirements.

We may want the company to hold more capital than it is required to hold by the regulator.
Additional capital will provide extra flexibility to management.
For example, greater flexibility with investment policy.

The ICA is an estimate. The company may wish to hold more for prudence.
If the company if very thinly capitalised, it may receive unwanted regulatory attention which could distract management.
Consider how much capital the parent (Megasure) has.
Consider the cost of capital of Megasure and the return of MICE under various levels of capitalisation. Consider costs of over-capitalisation.
Opportunity cost — consider any alternative uses of capital that Megasure has, and the returns on those activities.
Consider alternatives to parent providing capital.
The parent could provide a letter of credit rather than capital.

The parent could provide addition reinsurance to MICE to reduce its capital requirements.
However, these alternatives may not be acceptable to the FSA.

Rating agencies — what level of capitalisation does MICE require in order to obtain the desired rating.
Do potential policyholders or investors require a particular level of capital / rating in order to place business with the company?
Consider the capitalisation/ratings of competitors.

Where possible, consider future changes in regulation (for example, Solvency II)
The estimated capital requirements are higher in 2012 than in 2010.
The company should consider whether it needs to fund future capital requirements initially.
There may be options that don't require this to be funded initially, for example, through retained profits anticipated in the business plan.
Megasure will also wish to finance 2009 start-up costs of MICE.

(vi) *Should reinsurance be purchased?*

Purchasing reinsurance with a net cost of £1 million reduces the ICA by £5 million.
Many of the matters to be considered in deciding on the reinsurance purchase will have been quantified in the ICA.
The company should consider the risk reward trade-off when purchasing reinsurance, that is, the cost of the reinsurance and the benefit to MICE.
MICE's expected profitability will be higher if reinsurance is not purchased (reinsurance premium is saved).

This reinsurance does not seem to reduce MICE's capital requirement by very much.
As a result, MICE may be better off not purchasing this reinsurance.
Note that there may be a difference between MICE's capital requirements and the ICA estimates (e.g. ICG). £5 million may not be the figure for Megasure to consider.

Consider whether the parent has the extra capital available that would be required if reinsurance is not purchased.
…and what is the opportunity cost of the extra capital.

MICE's profits will be more volatile without reinsurance.
Consider whether Megasure (and its shareholders) prepared to accept more volatile profits in return for higher expected profitability.
Consider any rules Megasure has regarding the reinsurance purchased by its subsidiaries.

Megasure is also a reinsurer, so accepting an internal reinsurance may be consistent with its risk tolerance.
The ICA amounts are estimates, and may have underestimated the benefit of the reinsurance.
Although the reinsurance may not reduce the ICA by much, there may be other benefits.

Example of other benefits: e.g. may not reduce the ICA by much, but may reduce ruin probability significantly.
The reinsurance premium estimated in the business plan may be wrong.

There may be an alternative reinsurance strategy that would better suit MICE.
Example of alternative reinsurance strategy: purchase higher limits, purchase more reinstatements.
Another example of alternative reinsurance strategy: purchase reinsurance from counterparties with better credit quality.
MICE could consider securitisation/ART.

Consider the availability of reinsurance.
Consider what the regulator might think about MICE not purchasing reinsurance.
Consider rating agency views.
Consider the views of others, e.g. the underwriter, MICE board.
Consider competitors reinsurance strategies.
Consider possible tax differences.

(vii) *Ways to ensure premium adequacy*

Detailed repricing of each individual risk offered to MICE.
May be too time consuming and expensive to do this for every risk.
MICE may not have sufficient internal expertise, especially initially.
Data for individual repricing may not be available.
May not be possible if need to respond to brokers quickly.

Only write in follow market with trusted lead underwriters.
Availability market may be limited.

Buy or build pricing software.
Consider the output from catastrophe models and location models, for example, RMS.
Build in set underwriting protocols/guidelines and rating factors.
Agree policy wording protocols and exclusions.
Software may not work as intended.
Cost of buying/building software may be prohibitive.
Build tool to monitor the profitability of business being written.
Own data will be limited initially.
Some third party data will be available.
As business is short-tail, own data can be gathered relatively quickly.
Hire experienced staff (underwriters, pricing actuaries etc.) with detailed market knowledge.
Or engage external consultancy to review processes, controls and outputs.

Need to find a way to assess experience.
Experienced staff will be expensive.
Have internal peer review process.
Should focus most attention on largest risks.
May not be possible if need to respond to brokers quickly, but can apply results of peer review to future underwriting decisions.
Add margins to rates to reduce possibility of rate inadequacy.

Rates may become uncompetitive.
Ensure adequate premium loadings (commissions, expenses, reinsurance etc.)
Comment on practicality of monitoring loadings.
Monitor changes in volumes and other movements.
May be difficult to identify reasons for any changes.
Monitor insurance cycle.
May be difficult to accurately determine the position of the market in the cycle.
Monitor prices charges by competitors as a check on your own model.
It may not be possible to access this information.
Competitors may be charging the wrong rates.

(viii) *Extra line of business*

Regulatory considerations.
FSA would have to reconsider the authorisation (unless it was already authorised for the new line as part of the original process).
A sudden change in the business plan may create a bad impression with regulator.
Characteristics of new market
For example, size, growth, ease of entry, relationships.
Capital requirements of new line of business.
Is this capital available?
Opportunity cost of capital.

Expected profitability/return on capital of new line of business.
Consider whether new line is consistent with MICE's risk appetite.
There may be a diversification benefit of writing lines of business with low correlations.

Synergies with existing book.
Does company have sufficient expertise to write this line of business?
Would writing a new line of business distract the company from its commercial property targets?
It might be better to defer introducing a new line until the company has been established for a couple of years.

Consider views of parent.
For example, in raising the profile of the new business.

Consider views of rating agency.
Reinsurance requirements of new line of business.

Consider potential for cross-selling.
Consider whether system changes would be required.
Consider any tax issues.

2 (i) **Unknown:** the risk has been underwritten but the identity of the latent claim is not yet known

- the starting point will often be the original pricing basis (since no other actual information has come to light)
- but modified to reflect the fact that given the passage of time, if no latent claims have come to light, then the total expected value of latent claims will be lower than initially assumed.
- although numbers of claims fall off rapidly over time the average costs associated with these claims tended to increase with latency.

Potential: information about the possible identity of the claim type emerges but no clear link or liability has been proven

- for example, the suggested link between proximity to power cables exposure and leukaemia
- Here it may be possible to infer liability estimates based on the size of historical latent claims and possibly specific information related to this claim type.
- At this stage liability may not have been demonstrated and insurers may have a number of legal defences
- so it may be appropriate to estimate the probability of winning legal arguments as part of the liability estimation.

Emerging: the claim type has emerged as a latent claim but the full extent of the liability is still developing

- for example, asbestos related claims in the USA and the UK
- When latent claims enter the 'emerging' stage legal liability will be better established and there will be better information about the potential extent of the claims.
- There are two broad methods used to estimate the quantum of liability: top down and bottom up.
- It is usual to try and reconcile the results of the top down and bottom up estimates to arrive at a singe estimate.
- The top down method aims to produce a global estimate of the liability to either the economy or the insurance industry
- and then estimate the proportion of this which will be attributable to the entity in question.
- in the case of bodily injury type claims it may be possible to make a population wide estimate of the total number of claims using epidemiological models.
- This can be multiplied by the expected average cost of a claim to arrive at a total insurance injury loss estimate to which the insurance company's market share in this line of business could be applied.
- Under bottom up, the policies written by the insurance company are reviewed to see which could be exposed to this latent claim type.

- The liability for each assured is estimated (possibly using the top down method or some other method) and the insurance coverage provided by the insurance company is overlaid.
- Assumptions are made regarding the manner in which the claim will be allocated between the various years of coverage and the various insurance policies on each year.
- Credit may also be taken for reinsurance if there are scenarios under which these losses could impact outward reinsurance coverage.

Emerged/closed: the latent claim type has occurred and fully developed or is still emerging but in a predictable way that can be directly underwritten

- for example industrial deafness, coal miner's black lung
- claims can be assessed in the usual way
- care must be taken with difficulties in estimating the number of claims due to delays in reporting and assessment of liability (often courts)
- in estimating severity due to tail to settlement and court awards

(ii) **Alternative options**

(a) *Reinsurance*
Including ADC (Adverse Development Cover)
May not achieve the level of transfer of liability required as:
Reinsurer may require a cap so that liability would revert to B if cap is breached.
Reinsurer may require B to keep proportion of cover.
B continues to remain ultimately liable e.g. if reinsurer becomes insolvent.
Although B may have little further involvement in administration etc. it still needs to include the business in its regulatory reporting
… including any regulatory capital assessment.

(b) *Part VII transfer or Novation to external company*
\+ legal liability transferred
\+ so employee and shareholder rights not affected
\+ may improve the sale terms of Company B
\+ can transfer to specialist APH run-off company
\+ don't have to transfer non APH policies
– need to get FSA/court approval which can be time consuming (for Part VII transfer)
– or agreement of all three parties: policyholders, new insurer, old insurer (for Novation)
– possible reputational risk
− will need to commission an independent expert to opine on policyholder protection (for part VII); this could be expensive

(c) *Proactive commutation of policies*
\+ does not normally require regulatory approval
\+ opportunity to make profits on individual policies

– can be time consuming and needs senior input
– will be impractical to commute all the policies and unlikely to be able to remove all exposures this way

(d) *Scheme of arrangement*
+ Can achieve finality
+ Do not have to get agreement from every policyholder
– May be reputational issues for Company A if scheme fails or seen to be unfair
– Can take some time to set up
– May not have expertise in house to plan or execute

(iii) (a) **Estimate discounted mean term**

- Discounted reserves ~ undiscounted reserves × (1 + interest rate) – DMT

- So DMT can be estimated by ln(undiscounted/discounted)/ln(1 + discount rate)

Liability Type	*Best DMT*	*High DMT*
Asbestos	10.1	11.6
Pollution	5.0	5.0
Health Hazard	2.7	4.6
Claim Handling Expenses	*5.5*	*4.9*

(b) **Reasonableness**

Asbestos DMT higher than others reflecting longer latency period of asbestos
Some of pollution liabilities relate to clean up costs, which are not bodily injury claims so slightly shorter than asbestos
Pollution mean term could be a bit short
Pollution best = high could be an error (or other sensible comment)
Health hazards DMT would depend on claim type but expected to be shorter tail than asbestos
Health Hazard estimated DMT seems too low: may be error
Health Hazard is more dependent on latent claims (IBNR) as low ratio of paid claims to case reserves therefore expect a bigger difference between best DMT and high DMT
Asbestos High DMT > Best DMT

- May be reasonable if assume longer payment pattern accompanies deteriorating experience
- Because it would take time to deteriorate

Reasons for deterioration: more new claims reported than expected

- inflation of average claims costs higher than expected more
- mesothelioma claims (longer latency period and higher average cost)

END OF SOLUTIONS