

EXAMINATION

April 2007

Subject SA3 — General Insurance Specialist Applications

EXAMINERS' REPORT

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.

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Chairman of the Board of Examiners

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Comments

Individual comments are shown after each part-question.

- 1** (i) Outstanding reported claims reserve
IBNR
IBNER
Claims handling reserve
Reopened claims reserve
Catastrophe reserve
Equalisation reserve
Unearned Premium Reserve
Additional Unexpired Risk Reserve

Comments on question 1(i): Bookwork generally well answered by most candidates.

- (ii) *Advantages:*

Avoids heterogeneity arising due to:

- mix of policy coverage (including terms and conditions)
- mix of underwriting basis / use of rating factors
- changes in the mix of business

Easier to allocate to underwriting year if date of loss is unclear.

IBNR is automatically included in any reserve estimate.

URR is automatically included in any reserve estimate.

Disadvantages:

Takes longer for each year to become fully runoff, giving rise to greater potential uncertainty within the estimates.

Does not match the accounting procedures used by the company.

Can mask any potential changes in IBNR patterns.

Combines periods of potentially different claims environments.

May spread the incidence of a catastrophe or major claim event, potentially reducing the apparent magnitude of the event.

Comments on question 1(ii): Bookwork with most candidates making a reasonable attempt

- (iii) Loss ratio: otherwise known as Claim ratio.

It is the ratio of the cost of claims to the corresponding premiums.

Claim ratios may relate to periods other than a year.

e.g. Incurred claims / earned premium for a given accounting year

Or estimated ultimate claims / earned premium for a given accounting year.

Or incurred claims / written premium for a given underwriting year.

Estimated ultimate claims / estimated ultimate premium for a given underwriting year.

Incurred claims and earned premiums for a given accounting year should include estimated changes in estimates from prior years.

Comments on question 1(iii): Better candidates got full marks. Weaker ones just described one version of the loss ratio.

(iv) Assume business is written evenly through the year.

Assume that all the policies underwritten are annual.

Assume predecessors estimates are correct.

Assumption relating to how 6% change in premium applies.

Implies earned premium in year to 31 March 2007 =
 $£50m + £50m/1.06 = £97.17m$.

Assume loss ratio is calculated on an incurred claims / earned premium basis.

Implies incurred claims

2001: $0.98 \times £97.17 / 1.06^6 = £67.13m$,

2002: $1.02 \times £97.17 / 1.06^5 = £74.06m$,

2003: $1.05 \times £97.17 / 1.06^4 = £80.82m$,

2004: $1.20 \times £97.17 / 1.06^3 = £97.90m$,

2005: $0.94 \times £97.17 / 1.06^2 = £81.29m$,

2006: $0.95 \times £97.17 / 1.06 = £87.09m$.

Need to assess trend in claims incurred.

Up to and including 2003 can be taken at face value as there are no known mitigating factors, other than natural variation.

Claims incurred from 2004 onwards need to be adjusted to put them on a constant cover basis.

Aside from the change to cover, assume the same levels of exposure are covered each year (that is, assume no other changes).

Assume mix of business unchanged following changes in cover.

Cover came in half way through 2003/04. Therefore the impact may be assumed to affect 12.5% of claims.

However, changes in cover on foundations brought in before the likely influx in claims due to adverse weather conditions, so potential impact of hot summer should be mitigated on a greater percentage of incurred claims. Say 15% (though anything up to, say, 25% may also be considered reasonable).

The defined claim event date will be significant.

This assumes that the incidence of subsidence claims increased significantly because of the heat wave in August 2003 — but after the policy change came into force.

Implies claims incurred 2004 would have been $(1 / 0.75) \times 0.15 \times 97.90 + 0.85 \times 97.90 = \text{£}102.80\text{m}$ in the absence of any changes to the cover provided.

Likewise, some claims in 2005 will have originated from the original policy wording. So the impact may be assumed to affect 87.5% of claims.

However, the heat wave in August 2003 will affect this assumption, with proportionately more claims likely to be affected by the change in cover. Say 95% (though anything from, say, 90% may also be considered reasonable).

Implies claims incurred 2005 would have been $(1 / 0.75) \times 0.95 \times 81.29 + 0.05 \times 81.29 = \text{£}107.03\text{m}$ in the absence of any changes to the cover provided.

All of 2006 will be on the new cover = $(1 / 0.75) \times 87.09 = \text{£}116.11\text{m}$.

Estimates for new claims incurred = average of all years based on constant (old) cover, reduced to new cover basis.

However, also need to adjust for higher than average incurred in 2003/04 due to hot, dry summer.

By between 15% and 25%, judging by the numbers given — say 20%

$$= 0.75 \times [(67.13 \times 1.10^6 + 74.06 \times 1.10^5 + 80.82 \times 1.10^4 + 102.80 \times 1.10^3 / 1.2 + 107.03 \times 1.10^2 + 116.11 \times 1.10)] / 6$$

= £90.97m. (or alternative sensible calculation based on past results)

However, July 2006 was also exceptionally hot and dry ...
... so the loss ratio is likely to be markedly higher than the long-run average.

However, the effect could be compounded on top of the 2003 conditions, making the impact worse
... or the impact may be less as many problems will already have been highlighted in 2003/04 ...
... and losses will be limited by the changes to cover in 2003.

So, probably by between 15% and 25% judging by the impact of the conditions in 2003 — say 20%.

=> adjusted estimate for new incurred claims = £90.974m × 1.2 = £109.17m.

Expected loss ratio = incurred claims / earned premium

= £109.17m / £97.17m = 1.123.

As a cross-check 1.123 seems reasonable given the trend in loss ratios given in the question after suitable adjustments have been made.

Comments on question 1(iv): Generally poorly answered. The question required candidates to perform a number of separate calculations and adjustments to historical estimates to obtain a reasonable estimate of the 2007 loss ratio. Candidates who took the time to set out their solution logically tended to identify more of the steps required and so achieve the highest scores. Candidates were asked to detail any assumptions made. Some candidates oversimplified the question by inappropriate choice of assumptions, e.g., assuming that subsidence claims should be ignored, missing the effects of the policy wording or contradicting an assumption that was stated in the question. Many candidates attempted to adjust the 2003 and prior years' incurred claims to put them on a constant basis, rather than adjusting the later years. Although it is possible to produce a reasonable estimate using this approach, few candidates were able to apply it successfully. In both the 2004 and 2005 accident years, some claims occur from policies written under the new conditions and some from policies under the old conditions. Candidates who attempted to adjust only the 2003 and prior years generally did not identify these features of the 2004 and 2005 accident year claims.

- (v) Business may not be written evenly in the year as more homes are bought and sold during the period April — September, so policy cover is more likely to start in this period.

It will be important to analyse historical patterns of business written to determine a reasonable assumption.

This area of uncertainty will be particularly relevant in light of the timing of the hot dry periods and the timing of the change in cover as this is likely to impact the various proportions of policies on risk affected.

Mix of business may have changed.

A more granular split of data could be used, for example, separating subsidence claims.

The level of exposure accepted may have changed over time.

Example of investigation into level of exposure.

Assumptions regarding the impact of the hot dry summers will be critical to the estimates,

but are likely to contain significant elements of uncertainty ...

in particular, the effect of the 2006 summer, for which little data will exist.

It will be important to analyse the pattern of weather / subsidence related claims before and after the dry summers to ensure estimates are as reliable as possible,

and discuss any technical engineering issues with relevant experts.

Your estimates of the impact of the cover changes may contain significant degrees of uncertainty.

Any case estimates may be a particular source of additional uncertainty.

Your assumption regarding the underlying increase in incurred claims is likely to contain significant uncertainty.

However, it should be possible to assess a range of reasonable estimates and assess the impact of difference assumptions on your reserve estimates.

Your predecessor's estimates of the impact of the changes in cover are likely to contain a degree of uncertainty.

However, good quality data should be available to assess the two subsidence related items as claim amount and age of home should be available for all homes.

May reduce uncertainty by reviewing your predecessor's analyses of these changes.

Obtaining second opinions from a peer reviewing actuary should help to improve reliability and the level of confidence in any estimates, thereby reducing some of the uncertainty.

Estimates can be compared to benchmarks, industry sources, etc.

Comments on question 1(v): Again generally poorly answered with many candidates' answers largely limited to repeating the assumptions listed in part (iv) and noting that each may not be valid in practice. Some candidates produced lists of "typical" areas of uncertainty, for example, noting that it was possible that reinsurance arrangements or taxation may have changed. Such answers typically did not sufficiently consider the extent to which assumptions might not be valid, areas of uncertainty and possible ways to improve the reliability of estimates, as requested in the question. Stronger candidates generated a wide range of points.

2 (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.

Comments on question 2(i): Bookwork mostly answered well.

(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.

Comments on question 2(ii): *This was a straightforward bookwork questions. Full marks were available for candidates who wrote brief notes covering most of the main features. The candidates who failed to achieve a good mark typically wrote answers that contained inaccuracies, or focussed on a small number of features of Lloyd's*

(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.

Comments on question 2(iii): This question required candidates to apply their knowledge of Lloyd's and the London market set out in parts (i) and (ii) to advise Megasure. Candidates with a good knowledge of the main feature of these markets were able to identify the key differences that would likely be of most interest to Megasure and so scored well. A surprising number of candidates indicated that Megasure could only invest with limited liability through becoming a Lloyd's name. Others suggested that a London market company would not be able to write risks through a slip system. Candidates who did not understand the markets therefore achieved lower scores.

(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.

Comments on question 2(iv): Bookwork, however many candidates did not know that RMM is the same as MCR. Most candidates were able to define ICA, and many mentioned that this was a type of capital assessment that firms made by considering the risks faced by 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 is 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 additional 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 2010 than in 2008.
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 2007 start-up costs of MICE.

Comments on question 2(v): Poorer candidates lack of knowledge really showed here as they were not able to write very much. Often there was a standard list of things you would consider when deciding how much capital to hold. Better candidates tailored this to the specific situation and demonstrated their understanding of the capital requirements necessary now and in the future. Many candidates stated that firms should consider factors such as the potential for accumulation of risk or large losses. Such factors would have been considered in producing the ICA, and candidates were expected to refer to this in their answers. Candidates who produced standard lists of factors to consider when determining capital requirements needs without acknowledging where these were included in the ICA generally scored poorly.

(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.

Comments on question 2(vi): Weaker attempts just gave standard lists, hence missing the specifics that applied in the situation, and scored poorly. Again candidates who produced standard lists of factors to consider when determining reinsurance needs without acknowledging where these were included in the ICA generally scored poorly. Some marks were available for comment on the ICA calculations, e.g. consideration of capital requirements if alternative reinsurance was purchased.

(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.

Comments on question 2(vii): *The key features of MICE are that it is a new company, and it is writing London market property business. Candidates were expected to identify methods of monitoring pricing that are appropriate to such a company, and comment on the practicality. Ensuring the reasonableness of the loadings for investment income and fixed expenses would tend to be less important for MICE than some of the other factors identified in the solution. Some candidates devoted most of their answers to expenses and investment income and so omitted to mention other important considerations. Weaker candidates produced answers that didn't reflect the nature of commercial property insurance or were a standard how to price a product answer.*

(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.

Comments on question 2(viii): This question was generally well answered.

END OF EXAMINERS' REPORT