Subject SA3 — General Insurance Specialist Applications

EXAMINERS' REPORT

April 2009

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 the solutions to each part question that follows.

1 (i) *Example Methods*

Company A
Any relevant example — likely to be one of the standard stochastic methods.
Relevant reason, e.g. company A likely to have good data or suggestion is a widely recognised method.

Company B
Any relevant example — judgement, scenario analysis, or a statistical method applied to benchmark data.
Relevant reason, e.g. company B has limited internal data or necessary to use judgement.

Comments on Q1(i): *This was generally well answered by most candidates, although some candidates did not suggest a method as requested in the question.*

(ii) *Advantages of Margins*
Reduces the likelihood of holding inadequate claims reserves.
Relevant examples where reserves might deteriorate.

Should have a positive impact on credit ratings/share price support/attracts investors/international trade. This may make the general insurance industry appear more secure.

This is an advantage to insurers. People will only buy insurance if they believe the insurer will be able to pay any claims. This is particularly relevant for Merino, as one of the largest general insurance companies has recently become insolvent

The regulations would be likely to promote a greater use of stochastic modelling within companies. Although stochastic modelling would not necessarily be appropriate for every portfolio the proposals would require companies to give greater consideration to reserve uncertainty, thus increasing management awareness

A greater understanding of reserve uncertainty will provide valuable information to managers *(or other advantage of stochastic modelling)*
Consideration of reserve uncertainty may align well with other analyses undertaken by insurers, e.g. DFA, estimating capital requirements.

Reserving above the best estimate is increasingly regarded as best practice.
The insurance industry may consider it advantageous for local regulation to be in line with international standards. This will particularly be the case if local market participants also operate internationally.

All companies are required to carry out these calculations - neutral to competition.
Defer profits and thus defer payment of tax.
Encourages more appropriate use of reinsurance.
Makes benchmarking easier/consistency in the market.

Expected lower contributions to solvency protection fund.
Better match to risk.

Relevant example of a country where general insurance companies are required to hold risk margins, or such a change is proposed, e.g. Solvency II, Australia

Comments on Q1(ii): *A number of candidates failed to understand what a percentile is.*

(iii) Some companies may not have sufficient data to apply a stochastic method.
Some companies may not have sufficient internal expertise to calculate the required estimates. External expertise may be expensive to engage or unavailable.
Additional costs to companies in doing the calculations
These additional costs would need to feed into premium rates with potential impact on level of sales.

Risk margins are only one part of the regulations that ensure the solvency of insurers (e.g. operational risk, credit risk)
Arguably it is the total amount of capital held by insurers that is of greatest importance, not whether the capital is held as free reserves or reserve margins
Significant reserve increases can be difficult to explain to shareholders and/or other stakeholders
However, an annual release of margins from prior periods would become expected.

Some exposures are particularly difficult to estimate margins for, an example being latent claims.

There are many approaches to calculating a 75^{th} percentile.
Different methods can produce very different results.
Different methods are appropriate for different lines of business.
There is not yet general agreement among actuaries as to which is the best approach for a given class of business.
Naive application of methods can provide misleading results.

From a regulatory perspective, it may not be possible to determine whether companies' estimates really do represent the 75^{th} percentile.
Increased regulatory costs will feed back to general insurance companies.

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Although it is also impossible to say whether a best estimate really is the mean of the distribution, uncertainty is greater for more extreme percentiles.
It can be difficult to compare results between insurers, e.g. if company A has a lower margin than company B, it will be unclear whether this reflects the riskiness of the liabilities, method selection or a difference in judgement? (*or other relevant example*)
Such uncertainty may undermine confidence in the insurance industry.

The assessment of diversification between classes of business is one of the more difficult areas.
It is difficult to estimate correlations between lines of business based on observed experience.
It is often necessary to use general reasoning to estimate correlations.

Regulators may not have the necessary level of expertise and resources to review the risk margins estimated by general insurance companies.
The calculations used to produce the risk margins may be difficult to explain to management.
Other stakeholders may also be confused, e.g. policyholders, investment analysts.
There may be a false confidence held by stakeholders.
A 75^{th} percentile means there is still a 1 in 4 chance that reserves will be deficient.

Capital requirements should be revised to be consistent with the new reserving requirements, e.g. if companies are required to hold capital to the 99.5^{th} percentile, then the regulations should reflect the fact the reserves are already at the 75^{th} percentile.
If current capital regulations are set at a very low level, some companies may not have enough capital to reserve to the 75^{th} percentile.

Companies may appear less solvent, since they are required to hold higher reserves.
If reserves are overstated results may look worse than expected, and tie up assets that could be better used (increased costs of locking in assets, conflicts with growth/acquisition opportunities)

Companies may be unhappy if the profits cannot be distributed until later (because profits are used to fund reserve margins)

General insurance companies would be concerned that the new regulations result in a less favourable tax treatment.
Tax and regulatory issues for insurance companies who already hold implicit reserve margins.

Companies may reassess their mix of business in light of these regulations
75^{th} percentile may not be relevant for all classes of business

Comments on Q1(iii): *This was poorly answered by many candidates who failed to generate a broad range of answers for the number of marks available. The marks awarded for this section were generally low relative to the rest of the paper.*

(iv) General insurance companies would want to know the level competitors and other countries are adopting.
Consider any views that have been expressed in the market, e.g. by regulator/government, rating agency, competitors, industry or professional bodies.

If most companies decide to hold 80%, a company holding 70% might appear unattractive to customers or other stakeholders (or other relevant example).
However, stakeholders may be much less interested in reserving probability of sufficiency than other factors (e.g. policyholders may buy based on price).
Companies would certainly want to hold at least the minimum specified by law.

Consider uncertainty in best estimate and distribution of uncertainty to decide on level of percentile, e.g. if there is a greater than usual level of uncertainty in the reserves, companies may wish to hold a higher margin in order to increase the likelihood that reserves will be adequate.
However, the financial cost of holding reserve margins at a higher level of sufficiency will be greater for the most uncertain liabilities.
The cost of holding risk margins to a particular probability of sufficiency will also depend on the diversification within the portfolio.

Insurers should not adopt extreme risk margins, e.g. 99.9%.
Such percentiles cannot reliably be calculated for many classes of business.
It would be damaging the general insurance company's reputation if reserves deteriorated beyond an extreme margin.
As the selected percentile moves above the mean, the cost of providing for the risk margin increases significantly, e.g. it generally takes more capital to move from the 90^{th} to the 95^{th}, compared to moving from the 70^{th} to the 75^{th}.

For some highly skewed distributions, the mean might be above the 60^{th} percentile, e.g. reserves for asbestos claims *(or other example of a highly skewed distribution).*
It would seem imprudent to hold less than the best estimate reserves.

The company should consider the link between reserve margins and total capital requirements.
Consider the total amount of assets available and ability to raise capital.
The company may be relatively indifferent about the precise split of assets between capital and reserve margins.
The company may choose to minimise risk margins to increase the apparent level of capital.
This may be attractive if investment restrictions apply to assets backing the free reserves and the reserve margins *(or other relevant example).*
Alternatively there may be some tax or other advantage in adopting a higher reserve margin.

The company should consider its tolerance for reserve deterioration.
It is possible to imagine companies with a high degree of tolerance (e.g. certain privately held companies) *(or other example)*
The company may have derived statements of its risk appetite as part of its broader risk management framework.
Such statements may include a policy on tolerance for reserve movements, which would drive the decision on risk margins.

Consider whether reserves are to be held on a discounted or undiscounted basis. Undiscounted reserves will contain margins, so will correspond to a higher percentile of adequacy.

Position in insurance cycle, particularly if percentage can vary year by year
Opportunity cost of capital/other business opportunities.
Benchmarks used by smaller companies may not be available for different percentiles.
Consider mix of business (classes of business, territories).
Cost and availability of reinsurance.
Time horizon over which adequacy is assessed: the shorter the timescale, the less capital required to achieve a desired probability of sufficiency

Comments on Q1(iv): *Most candidates were able to identify that the market influences (e.g. competitors, rating agencies, position in insurance cycle) would have a significant impact on the probability of sufficiency to choose. Better candidates identified risk appetite, the increased cost of holding more extreme scenarios, reserve discounting, existing available capital and insurer reputation as important considerations. A large number of candidates suggested that a higher percentile should be used for classes with greater variability demonstrating the lack of understanding of percentiles.*

2 (i) *Risks of not building rating model*

The premium charged by the underwriter may be insufficient due to features that would be identified by the rating model but not by the underwriter.

Lack of rating factors in existing rating may lead to risk of anti-selection, in particular by other insurers who are collecting and analysing up-to-date data and have better rating structures to the extent that the underwriter's own knowledge is insufficient for ideal rating.

Significant risk of concentration of knowledge in one underwriter.
If the underwriter was suddenly to leave the company, risk of not finding replacement underwriter of similar expertise.
The junior assistant is unlikely to have the necessary underwriting experience in the short term.

Very difficult for the underwriter to accurately adjust prices for changing assumptions without a rating model, such as:

- expenses
- commission rates
- investment conditions
- capital required
  - e.g. as nature/size of company changes
  - changes in regulatory environment
- target profitability

- change in claims environment
- latent claims
- inflation (claims, expenses)
- changes in exposure
- cost and structure of reinsurance

Subjective allowance for cross subsidies.
Difficulty in measuring profitability performance of this class of business.
Accurate rate change information unlikely to be available.
Lack of explicit rate monitoring processes and data capture may not meet regulatory requirements.
Potentially higher solvency requirements from regulators due to Solvency II
Small company => claims volatility and rating accuracy are significant risks
Difficulty in setting appropriate reserves for account as difficult to gauge rate adequacy against accurate technical rate.

Risk of writing loss making business if underwriter continues to use US rating model as US claims experience may not be relevant to UK and other European countries
Different coverage/terms and conditions in the US compared to UK and other European countries and different legal/regulatory environment in the US compared to UK and other European countries.

Pricing assumptions may not have been updated for 5 years.
In particular claims inflation may have been considerably higher during the period.
Greater danger of being influenced by market cycle as no relevant technical rate available to guide the underwriter.

The underwriter only occasionally uses the model, possibility selecting occasions when US relativities are too low and possibly inconsistent with the junior underwriter's judgement.

Lack of clear audit trail for internal peer review process.
Rating models may not have been properly checked in the first place.
Risk of losing business to peers with accessible online systems.
Reinsurers may not trust rate adequacy resulting in higher reinsurance costs.

Comments on Q2(i): *Too many candidates focused on what would make up a rating model rather than considering the wider commercial and business implications of having an effective rating process.*

(ii) ***Advantages to underwriter***

More time to concentrate on underwriting more complex cases.
Simplified rating approach on standard risks.
Ability to quote quicker to assist expansion.
Potential to write higher volumes through efficiency savings or make more careful selections for risks taken on.

Potential to identify underpriced renewals to correct rating or decline at renewal, or overpriced renewals to compete more aggressively at renewal.
Easier/quicker to demonstrate profitable performance of account.
Capture of granular exposure information would make it easier to adjust profit assumptions e.g. in the light of a legal change.

Ultimate loss ratios described by underwriter are not necessarily an accurate indicator, only backward looking and more easily attributable to "good fortune"
Better understanding of account from rating exercise and perhaps formal collection of additional rating information within rating tool and on IT systems

Less time explaining account to management.
Junior assistant requires lower training burden as "knowledge" within tool
Fewer risks with resourcing.
Rating model could provide a more robust benchmark price compared toposition in market cycle including year on year price changes relative to benchmark.
Consistency in approach to pricing risks (improves reputation with brokers).
May be able to negotiate better reinsurance terms using the better data.

Internal peer review easier.

Meets regulatory underwriting standards better.
Highlights areas where the underwriter's judgement is out of line with market prices which may improve underwriting quality.
Can establish web / auto quoting for small homogeneous risks.

Comments on Q2(ii): *In parts (i) and (ii), better candidates appreciated that the advantages to the underwriter of building a model were not simply a reverse of the risks to the company of not building a model. Better candidates recognised the level of subjectivity and lack of a clear audit trail of the underwriter's decision making process as well as the potential risks involved with the use of an inappropriate and out of date US rating model.*

(iii) ***Information requested***

Underwriting:
Book rates and existing method of pricing adopted.
Trades/occupations covered/declined.
Existing rating factors considered/available.
Level of subjectivity needed.
Scale of size discounts.
Approach to pricing different limits of indemnity if applicable, e.g. increased limit factor (ILF) curves used.
Distribution channel of business written.
Different policy wordings/terms and conditions used.
Exclusions and excesses for other European business.
Information provided by client when risk quoted, in particular the claims history provided to assess what (if any) experience rating possible.
Frequency of claims.

Exposure information for account.
Any limits to individual policyholder exposure (by manual/clerical wageroll).
Typical limits of indemnity / size of risks in portfolio.
Countries risks written in / currencies risks written in.
Views on market cycle (current prices soft/hard?)
Any current competitor rates available.
Time available per risk for pricing/time constraints.
Conversion rate and viability of quoting before/afterwards.
Expected future claims inflation to apply (will want to build this into the model and will be necessary if integrating rate monitoring into the process)
Existing risk data that could be used to (at least partially) populate a rating database for renewal risks to save time.
Potential latent issues not yet showing in claims experience.

Reinsurance:
Reinsurance structure.
Current costs of reinsurance, net of recoveries.
Expected changes in the above.
Any feedback from reinsurers on current portfolio against market average.

Claims
Fgu claims history for line of business.
Ideally 10 years of data.
Transaction level detail if possible.
Split between payment type (legal costs, compensation, loss of earnings, etc.) and/or paid & incurred triangles.
Split by territory, industry, peril, rating cell.
Gross/net of reinsurance.
To understand development of claims for experience rating and payment pattern to estimate investment income.
Details of historical changes in processes, controls, systems, external factors (e.g. legislation).
Nil claims.
Catastrophes/unusually light or heavy experience.
Potential latent issues not yet showing in claims experience.
Any benchmark/market data that may assist in building model.
Cost of handling claims.
Information on large claims in market, not just own account.
Views on claims inflation split between legal fees, compensation, cost of care, loss of income.

Finance:
Expenses including relevant allowance for inflation including any breakdown of expenses available (direct/indirect).
Commission levels (e.g. any fixed fees, differential new business/renewal commission rates).
Interest rate assumed / investment income information.
Capital requirements and return on capital required for this business.
Taxation (corporation tax, IPT).
Future agreed budgets/plans/forecasts for employers' liability account.

Comments on Q2(iii): *This was answered well by most candidates. Better candidates identified that most information would be required from the Underwriting and Claims areas and therefore gave greater focus to these areas in their answers. However, there was a seemingly universal lack of awareness of the statutory nature of EL cover in the UK meaning that deductibles are not applicable and limits are generally the same.*

(iv) ***Significant problems***

Biggest problem is lack of data especially as small company.
Particularly in respect of disease claims.
Meaning little information in any rating cell and employers' liability claims frequency low so huge reliance on underwriter opinion.
May be few rating factors following rating model review that are hard to define (underwriter's view) .
Potential errors in the data.
Difficulty in building in different rules for each European country.
Future court awards unpredictable.
Costs of building rating models may be prohibitive (and lack of expertise to build).
Added uncertainty around projected burning costs (appropriate allowances for IBNR/IBNER).
Potential problem with underwriter buy in.
Particular problems if pricing higher limits of indemnity as incidence of large claims even lower.
Latent claims are difficult to allow for objectively.
Potential IT problems if aiming to embed into existing systems.

Comments on Q2(iv): *This was reasonably well answered, although few candidates identified the lack of disease claims history and issues around different rules for European business*

(v) ***Advantages:***

Additional source of revenue with very little resource/cost required to set up arrangement internally .
Greater expertise of MGA could provide potential to underwrite other types of business not currently written by insurance company..
Relevant examples.
Based in the UK so no currency risks.
Marketing undertaken by MGA rather than coinsurers.
Diversify portfolio exposure into other types of business/countries thus reducing accumulation risk.
Could provide expertise in handling claims for non-standard risks or claims

Provides policy and claims administration through its own IT systems so little ongoing cost for insurer.
Lead insurer likely to be responsible for MGA audits so lower ongoing administration costs.

If MGA fails, the insurance company is only liable for its coinsurance share of claims (i.e. lower risk than taking on whole risk and reinsuring).
If arrangement successful, could lead to additional capacity offered for other classes of business (e.g. public and product liability) or cross selling.

Disadvantages:

Less control over underwriting decisions and risk that policy wording may be undesirable.
Could lead to undesirable risks being underwritten.
Potential concentration of risk and/or aggregation of risk with own portfolio.
Certain risks may fall outside existing reinsurance limits or may expose insurance company to risks not authorised to write by regulator.
Capacity limits would have to be imposed due to limited capital of insurance company which may in itself restrict the type of business written
MGA may be competing for same target market as insurance company which may result in company effectively competing against itself for same business or could cause broker relationship issues if through same distribution channel.
MGA likely to request higher commission rates or fees compared to company selling through brokers.
May not provide same return on capital compared to existing portfolio.
Potential loss of or reduced level of management information if MGA's IT systems are substandard .
Less experienced MGA claims handling staff may result in higher ultimate claims costs.
Potential lack of experience in handling particularly complex claim cases involving serious injuries.
Claims handling fees may be higher than equivalent cost of insurance company's own claims handlers.
Different claims handling philosophy to insurance company may imply difficulty in establishing accurate claims reserves.
Especially if MGA is relatively new with little historical claims development.

Likely to be contractually tied into arrangement for an agreed period so difficult to walk away immediately from arrangement if results are poor.
Increased delay between policyholder paying premium and receipt of premiums from MGA due to credit agreements between broker, MGA and insurance company meaning potential loss of investment income.
Revenue stream and service elements dependent on MGA staying in business.

Potential credit risk with binding arrangements.
Time delay on claims bordereaux will mean that internal development patterns will not work well for the binding risks; may have to project separately.
Harder to exit the market rapidly if needed.
Reinsurer may not like the third party involvement.
May cause resentment with internal underwriter over loss of control or may impose additional supervisory burden on in house underwriter to keep track of the business.
Moral hazard dependent upon MGA share of risk (e.g. underwriting risk)

May be difficult to assign ownership; if the in house underwriter is responsible for the business then he may object to the risk to his bonus.

Comments on Q2(iv): *This was poorly answered by many candidates. A significant number of candidates did not generate a broad range of advantages and disadvantages. Many candidates were unfamiliar with the concepts of binding arrangements and managing general agents which are very topical subjects.*

END OF EXAMINERS' REPORT