

EXAMINATION

April 2005

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.

**M Flaherty
Chairman of the Board of Examiners**

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1 *The examiners were generally disappointed with the majority of solutions given to this question.*

In particular there was a lot of information given in the question which many candidates did not seem to use to form their solution. There were several references to figures in the question which candidates did not refer to in their answers, in particular regarding the pattern of earning of premium, and the value for money of reinsurance.

Owing to the lack of reference to information given candidates did not gain marks for mentioning the likely relevance of some of their options in achieving the target profit. When candidates did mention the possibilities of meeting the target many considered the long term rather than the short time window of the next financial year. Hence some of the solutions suggested options which would not deliver the profit target in the following year.

There seemed to be very little reference to the fact that the expense action already taken may not have been fully reflected in the profit figure and hence this was a source of further improvement for the following year.

Some candidates seemed to be unsure what areas of the business the underwriter would be able to influence.

Solutions to part (ii) were generally very good.

(i) Options which could increase earned profit next year are:

1. Increasing written and therefore earned premium.
2. Reducing acquisition expenses.
3. Reducing internal expenses.
4. Reduce the cost of reinsurance.
5. Writing to a lower loss ratio (for new / renewing business).
6. Reduce the cost of claims for claims settling next year.
7. Speeding up the earnings pattern of the portfolio.
8. Getting a higher investment credit.
9. Change to reserve assumptions and methodology.

For each option assume everything else unchanged:

1.

- For two year policies: earned in yr 1 = $50\% \times 1\text{yr} \times 50\%$ pol exposure = 25%. Therefore 75% earned in year 2. (At 18 mths = $50\% \times 1.5\text{yr} \times 75\%$ pol exposure = 56%)
- Policies to be written in the forthcoming year will commence uniformly over the year and will on average be written half way through the year. They will thus be exposed for a quarter of their policy term. In the

following year the earned premium on these policies will thus be 6.25% of that written.

- The portfolio premium would need to grow by \$640m.
 - This is a very substantial increase which may be part of the plan for this portfolio.
 - But may not be previously planned and could be a tough target.
 - Can the individual markets/offices deliver this?
 - Increase in premium likely to be restricted as niche market.
 - Over half is written in the London Market — subscription market — therefore could increase its written lines on business.
 - But the company could be already writing large lines with cedants and brokers unwilling to give Co A larger lines.
 - The company could also write larger risks
 - Could diversify the types of risks written and by channel
 - Would the loss ratio suffer by taking on larger volumes of business which may not be as good quality as the existing business.
 - Would the acquisition costs suffer by accepting business from higher cost sources.
 - Can the front office / back office cope? Would direct expenses increase to cope with the new volume?
 - Will the reinsurance programme be as efficient? How does the RI premium adjust? Will RI aggregates be breached? How does the new volume and business mix compare to the RI submission information? Will the terms of the RI treaty have to be renegotiated?
 - May breach statutory premium limits in some countries.
 - Requiring the injection of capital into some countries.
- 2.
- Acquisition expenses will be different from the different sources.
 - Some sources will be higher than others. Some may be relatively very expensive.

- Could cut the amount of business from the highest cost sources.
- This may improve the percentage profit but not necessarily the absolute profit
- Could take a tough negotiating stand with all brokers to cut brokerage.
- Which may be possible if the company dominates this niche market.
- But may result in lower volumes if the brokers can place the business elsewhere.
- Restructure commission arrangements to give incentive to provide higher volumes
- However there are sensitivities regarding volume related commissions (Spitzer)
- Could push for (more) direct business with very low acquisition costs.
- But again this may annoy brokers who may take business elsewhere.
- Could make commissions profit related so higher commissions only paid on profitable business.
- But this will reduce the benefit of better business.

3.

- Reduced over the last two years — have all efficiency savings already be made?
- It has taken 2 years to reduce expenses by 2%, there may be some savings in the next year from previous/current actions.
- You are unlikely to achieve the full 20% improvement with expenses alone, however a further 1% reduction in expense ratio would contribute \$2m to the required increase in profit.
- Niche product, therefore specialists required in underwriting / claims, massive savings probably not possible.
- Internal expenses consist of direct and indirect, much of the internal expense will be out of the control of the portfolio manager.
- Closing an office or other drastic measure would probably not deliver the earned profit in the required timescale — redundancy payments etc.

- Introduce new admin procedures to cut costs, but again this is unlikely to be achievable in the required timescale.
- 4.
- RI “well used” and “key to smoothing profits” so we expect a fairly high recovery rate, assume 50%, but could be higher or lower.
- Must reduce the net cost of the reinsurance, so take into account reinsurance recoveries as well as the outward premium. Not buying any RI would not reduce the costs by 17%. If recoveries average 50% then cutting all RI would be expected to increase profit by 8.5%.
- Reinsurance outward premium is $\$200m \times 17\% = 34m$ assuming 50% recovery means that the cost will be $\$17m$. Halving the reinsurance spend will reduce the cost from 17m to 8.5m — increasing profits by 8.5m.
- RI looks to be the solution to the manager’s problem so we need to know what the current arrangement is and what loss ratio it is running at. Depending upon the insurance cycle may be able to cut reinsurance premiums payable.
- It is possible, but unlikely, that reinsurance provides a net benefit to the portfolio.
- Need to know when the RI incepts and any existing agreements — if incepts mid year then will only be able to reduce the costs for a part year.
- Long term agreements may mean that no changes are possible.
- Reducing Xol reinsurance spend will increase the % volatility of the account.
- If Xol Reinsurance cover is reduced by:
 - increasing retention
 - reducing the limit
 - or retaining a self insured share across the programme
- Purchase reinsurance in-house and avoid paying brokerage.
- Reducing QS reinsurance spend will not change the % volatility of the account.
- Ads / disads.
- This may not be what the manager is comfortable with. Manager may prefer a less volatile / more certain result.

- Reducing the amount of reinsurance purchased may reduce the other perceived benefits obtained from reinsurers e.g. market knowledge.
- Purchasing less reinsurance might also lead to higher capital requirements.

5.

- Could write business to a lower Loss Ratio by tightening policy conditions, increasing rates, and better risk selection.
- However, the team should already be writing the best business they can so this could be a difficult task.
- Increasing premiums may lead to loss in business overall, depends upon elasticity of demand.
- Alternatively the LOB may be writing to significant losses.
- So improvement should be much easier.
- The market cycle may be hardening making the task easier,
- or v.v.
- It may be possible to be more rigorous with renewals, exiting poor business.
- Statistical analysis of data may identify both good and bad business which could be targeted for appropriate action.
- But writing higher business volumes works against writing to lower loss ratios.
- May identify one office with a higher loss ratio,
- leading to difficult decisions which the manager may not want to take.
- May mean axing some policies which have been written for many years, and breaking longstanding relationships — difficult.

6.

- Profit is measured on an earned basis. So reducing incurred claims next year would increase profits.
- Reduce margins in reserves would increase taxable profit in that year, although this would increase the risk of reserve inadequacy.
- Could be more active in claims adjusting, settling outstanding claims for less.
- This may be possible in a specialist / niche LOB.
- But this should be being done already.
- This may increase loss adjustment expenses.
- But should be more than compensated by lower claims.
- But the strategy may not be successful.

7.

- Accelerating the earnings pattern of new / renewing business will accelerate earned premium next year.
- Thus accelerating earned profit.
- Assuming business written to a profit.
- But this can only be done once per policy.
- But may not be possible in this niche Lob.

8.

- Not a lot can be achieved here. Investment return is credited according to a company allocation.
- This may be achievable but is not an exercise which adds value to company A. It benefits the manager at the expense of someone else.
- Increasing this portfolio's credit would mean reducing the credit for another portfolio.
- If the total investment return is to equal that earned.

9.

- Change Reserving Methodology to reduce claims incurred in the financial year (or their present value). The extent to which this may be possible depends on the manager's sphere of responsibility or influence and the legal constraints in the territories concerned.
- Discount reserves at a higher rate of interest if this is allowed.
- Extend mean duration of discounted business — discount according to a slower payout pattern.
- Reduce case estimates.
- The above may be perfectly legal if a conservative approach is currently taken, but care does need to be taken.
- These options do not add value to Company A, they impact the timing of the emergence of profit.

(ii) Conflicts of interest / opposing views
Reinsurance spend
Investment return

1. RI Spend

- Manager views RI as crucial to smoothing results. Elimination of large losses is achieved by Xol not QS RI.
- 17% of \$200m is \$34m which is a large cash spend.
- What the manager views as a large loss may be insignificant to the company.
- Manager may be buying down to very low retentions which Company A would rather retain.
- Manager may be protecting events which may be more efficiently protected at group level.
- This may be even more acute for the smallest premium volume offices where a moderate sized claim could lead to an underwriting loss.
- Reinsurers aim to make a profit so the manager is ceding profit over the long term.
- RI arrangements could involve funded/finite deals which smooth profits but do not benefit Company A.
- Ceded RI may be with companies less financially secure than Company A.

- Some RI purchases may have more to do with relationships than any added value.

2. Investment return

- Not a function of underwriting so can argue should not be part of the performance assessment.
- Manager may not be taking into account currency matching of reserves or matching by duration.
- Some currencies e.g. Japan, USA have much lower interest rates than the UK.
- London Market business does not have to be £ denominated.
- Matching investments by duration, the manager's view may be much shorter term.
- Investment managers should have their own targets, LOBs should not benefit / suffer from any deviation from target by the investment managers.
- Managers view may not take into account the investment costs.
- Or the investible percentage of funds.
- The quality of investments may be different.
- The company is not necessarily invested in fixed interest investments and for the time being return on their investment return is set at a lower notional rate but in the long term will be higher.
- May be regulatory restriction for the company on what they can invest in and this affecting the notional return.
- Effect of tax on investment returns may be strict for the company than the individual thus affecting net of tax return.

2 *The better candidates showed that they had both read the notes and could demonstrate an understanding of the bookwork, and that they had prepared for the exam by reading around the subject in respect of important factors affecting the GI industry at the moment.*

The examiners were disappointed to see though that a number of candidates did not appear to have studied the course notes on this subject.

(i)

(1) A new risk-based enhanced capital requirement (ECR) based on capital charges to be applied to asset values and insurance premiums and reserves.	ECR
(2) Insurers will be required to undertake their own assessment of their capital needs according to the size and nature of their business taking into account major sources of risk (including systems and controls and operational risk) and calculate their individual capital assessment (ICA) using either stress and scenario tests or stochastic modelling. FSA guidelines state the minimum risk appetite should be 99.5% confidence of capital adequacy over a 1 year time horizon	ICA
(3) Individual capital guidance (ICG) will be set by the FSA. ICG is based on the FSA's own view of how much capital individual insurers should hold, taking into account insurers' assessments of their own capital needs, risk and capital management processes.	ICG

(ii) The ECR is an FSA-prescribed, risk-sensitive calculation, made up of the sum of various capital charges based on asset categories and underwriting risk:

$$\sum \begin{array}{l} \text{Asset-related values} \\ \text{Insurance related values} \\ \text{Net written premium} \end{array} \times \begin{array}{l} \text{related asset factor (\%)} \\ \text{relevant technical provisions factors (\%)} \\ \text{relevant premium factors (\%)} \end{array}$$

- Asset-related values are calculated after the application of valuation and admissibility rules.
- Insurance-related values comprise (for each class of business), the total technical provisions, including outstanding claims, IBNR and IBNER claims, unearned premiums reserves and any additional unexpired risk reserves. Claims reserves are net of anticipated reinsurance recoveries and premium reserves are net of deferred acquisition costs.
- Premium values are gross written premiums net of reinsurance but before deduction of commission.

(iii) **Advantages**

- Risk based so assessment and framework needed so controls and systems.
- Company specific data can be used so should be more accurate.
- Company calculates so forces to assess and understand the risks in more detail — may lead to better management.
- Rigorous documentation.
- Company can continuously monitor the amount they need and calculate changes from changes in strategy i.e. buying more reinsurance changing portfolio of business previous backward looking.
- Higher level of capital may reduce insolvencies.
- ICA does not penalise conservatively reserved and sufficiently premium rated companies.

Disadvantages

- Complex, difficult to model and to validate model, i.e. higher costs etc.
- May not be transparent.
- Different companies may take different approach to modelling assumptions (for example tails or correlations), which may lead to different levels of capital being set.
- Need lots of data.
- Even with large database some risks are very subjective for example cats and operational risk.
- Expected higher capital may put UK companies at a disadvantage in producing returns for shareholders.

(iv)

- A summary of the financial position of the firm at the time the report is constructed and the risks to which the firm is subject.
- The firm's proposal for ICA expressed as a proportion of its ECR calculation.
- Relevant historical development of the firm and any conclusions that can be drawn from that development which may have implications for the future of the firm.

- The business profile of the firm, the environment in which it expects to operate, and its projected business plans, projected financial position and future sources of capital.
 - A detailed review of the capital adequacy of the firm. This analysis could include a commentary and opinion on the applicability of the ECR to the firm's own capital position and its appropriateness compared to its own capital assessment. It could involve an analysis of the current capital levels and movements in solvency levels during the past years, future capital requirements, and general outlook.
 - An identification of the major risks faced in each of the following categories: credit risk, market risk, insurance risk, operational risk liquidity risk and group risk, and the extent to which a firm holds capital in response to each risk.
 - The quantitative results of stress tests and scenario analyses carried out by the firm and the confidence levels and key assumptions behind those analyses.
 - Identification of any risks (for example, systems and controls weaknesses) which in the firm's opinion are not adequately captured by the ECR and the firm's assessment of how the firm is responding to those risks and if through holding capital, the amount.
 - If the firm uses more sophisticated modelling approaches, the FSA would also expect a statement on the confidence level and other parameters that have been used in the model.
- (v) Market risk — This risk could be modelled using an economic model that would enable a stochastic asset valuation at the end of the period by simulating returns for each asset type. Alternatively could use asset movement stress and scenario testing. Such risk could be correlated with insurance risk as dependent upon inflation. Also could be correlated to liquidity risk for example in the case of reinsurance failure.

Insurance Risk — This risk is likely to separate catastrophe claims experience from attritional experience. Likely to model risk in respect of claims, reserves etc using ECM (economic capital model). Correlations with most other risks, e.g credit risk following effect of cat claim, liquidity risk for reinsurance failure

Credit Risk — Simulate counterparty risk using an ECM stress and scenario test. Credit risk arising from a reinsurer failure could have an impact on other insureers leading to a market risk, and also as mentioned above could lead to a liquidity risk.

Liquidity Risk — In this case would likely to produce a cashflow model. As stated above this is closely linked to insurance risk if large claim occurs.

Group Risk — In this case each part of the group would be modelled separately, i.e. parent or subsidiaries. There is a link here with market risk if an event takes place that affects all areas of the group.

Operational Risk — This risk is likely to occur as a result of poor management leading to monetary loss. As such stress and scenario testing against the risk register is likely to be used there is a correlation with Insurance risk as bad management could lead to high loss ratios.

- (vi) For the insurance risk need a frequency severity model. Model gross claims and also insurance and inwards reinsurance separately. Most likely to model attritional, large and cat losses separately. Use historic data converted to current times allowing for claims inflation, line size change, profile of the account and rate changes (to capture relative exposure), and insurance cycle. This will allow an estimate of freq and severity for the large loss, and distribution for the attritional claims. Parameters of the distributions should be varied and parameters should be estimated by fitting distributions to the data using goodness of fit tests. RMS or other cat modelling software can be used for the cat part.

The assumptions should be discussed with management and the underwriters and checked against the business plan. This gives the gross losses. Set up a stochastic model and model explicitly any recoveries from the reinsurance program including reinstatement premiums.