

EXAMINATIONS

April 2004

Subject 403— UK Fellowship General Insurance

Paper One

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.

J Curtis
Chairman of the Board of Examiners

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1 *This question was generally well answered. Most candidates scored well over 50% on this straightforward bookwork question.*

- (i) (a) A layer of excess of loss reinsurance at a level where there is likely to be a fairly regular flow of claims.
- (b) A clause that may be included in a non-proportional reinsurance treaty, providing for the indexation of monetary limits (i.e. the excess point and/ or the upper limit) in line with a specified index of inflation.

- (ii) (a) Used where it is desired to significantly limit exposure to adverse deviations in claims experience / low risk appetite.

For example with a new class of business, in respect of which there is little or no experience or small class.

- (b) Used to ensure that the layers agreed maintain real value through time / maintain equity between insurer and reinsurer.

Particularly useful in periods of high inflation or where the term of coverage (or over which claims can occur) is long.

2 *This question was based on a continuing topical subject and has recently been asked about in previous exams, but in this case concerned about different classes of business written by an insurance company, rather than about different insurance companies. There was a wide range of marks for this question.*

Different uncertainty around the number or frequency of claims.

Different uncertainty around the claims cost / size of large losses

Different potential for accumulation of claims

Size of the class of business

Profitability of the premium rates

Risk of latent claims

Different levels of reinsurance

Different reinsurers and hence security

Security of other third parties

Exposure to / impact of changes in legislation

Operational Risk

RBC needed to cover the run-off of reserves. A new line of business would not have past claims uncertainty

Growth of class of business

Length of claims development tail

Term of the business

Exposure to different currencies

Asset allocations are different between lines

- 3** *Candidates approached this question in a number of ways. Whilst the examiners thought that the solution below was the best approach, marks were awarded by any valid approach. Generally those candidates who did not produce solutions as indicated below did not consider all the possible claims liabilities and therefore did not cover all the uncertainties.*

Reported outstanding claims

There is uncertainty about whether the insurer is liable for the claim e.g. whether the driver at the time of the accident is insured under the policy.

Also the size of the claim payments is not known in advance e.g. with a motor liability claim the claimant's medical condition has to stabilise before a reasonable estimate of claims cost can be made.

Particularly relevant as insurer small so impact of one claim is larger
Uncertainty about salvage and subrogation

IBNR

Some IBNR is predictable e.g. the delay in reporting claims or pipeline. However personal lines motor business is a class of business where there can be a considerable delay between a claim occurring and it being reported to the insurer.

Latent claims

These have not been an issue in motor classes to date but the possibility of them creates uncertainty.

Unexpired risks

Uncertainty here as the period of exposure has yet to arise and the potential for any claim may change from the circumstances already experienced
e.g. there may be a train strike which means more people drive their cars and hence claims frequency increases

Reinsurance recoveries

As the insurer is small and writing motor insurance only it is likely to have reinsurance. There is uncertainty about recoveries from reinsurance since a reinsurer may fail or delay payment in the event of a dispute occurring.

Other uncertainties

Other uncertainties that should be considered are the potential for re-opened claims and future variations in claims handling expenses (che).

Che may vary as the costs of wages or occupying a building vary from those expected.

BI more uncertain than Property Damage, and hence Comp less uncertain than Third Party only

If the claims reserves are discounted then the future net investment return introduces uncertainty in the returns available and the rates of taxation that will apply to them.

Uncertainty over whether past data is appropriate for basing estimates of liabilities, for example, due to change in the mix of business and hence a change in the mix of claims.

There is also uncertainty in respect of the future effect of NHS fees, Ogden, wrong data, inflation etc.

- 4** *Candidates generally scored very well on this question especially if they approached the rather straightforward calculations correctly. As in the past, when asked for suggested values some candidates do not give any, probably because they are uncertain whether or not they are correct. The examiners can not give credit at all for suggested values if none are given, so it is better to give some even if they are wrong. Marks were awarded for part (vi) even for sensible comments even if the calculations in parts (iv) and (v) were wrong. Most candidates clearly understood that trying to achieve 100% growth in business in 1 year was not achievable given the other constraints.*

- (i) For very small fleets each vehicle could be individually rated, using book rates and each vehicle's individual NCD.

The fleet premium would be the sum of the individual premiums.

This approach gives no credibility to the total claims cost incurred by the fleet.

However via the NCD mechanism it does allow for the experience of the fleet.

NCD is a numbers based system not a costs one as used by the more conventional fleet credibility method.

For larger fleets some credibility to the fleets own experience would be applied.

The premium charged to the fleet would be a blend of the book rated premium and the estimated burning cost of the fleet.

The credibility formula is

$$P = ZA + (1 - Z) E$$

where Z is the credibility allowed between 0 and 1

A is the risk premium based on insured's own experience

E is the risk premium based on the insurers aggregate experience (book rate)

For the largest fleets the credibility is 1 and the premium charged will be wholly based on the insured's own experience.

Fleets can be prospectively rated where the premium charged for the renewal depends on the experience of the risk prior to that renewal.

The other basis is retrospective and here the premium charged for the current period is adjusted based on the experience of that period of risk.

Usually a deposit premium is paid at the inception of the policy and this will be followed by an adjustment premium at the end of the period.

- (ii) The credibility allowed to a fleet's own historic claims experience can be determined in a number of ways.

One method is to determine a scale where the number of vehicle years that the fleet has been exposed for in the last 5 years controls the credibility given.

Confidence in estimation of E

Also may rely on the number of exposures expected to be insured in the coming year.

Allowance should also be made for any change in the cover and or mix of risks, thus basing the decision upon the reliance of past data.

- (iii) Other components of the theoretical premium rate are:

Commission payable to the broker / intermediary if appropriate, these are a fixed percentage of premiums and are normally loaded as such, for fleet business the normal commission is 10%.

Expenses are fixed and variable, the variable expenses can be loaded as a percentage of premiums. Fixed expenses can be allowed for by calculating the average amount that needs to be recovered per fleet and an average amount that needs to be recovered per vehicle over the whole book and then applying these to individual fleets.

Initial and renewal expenses should be considered and applied to new business rates and renewals correspondingly split according to fixed and variable and loaded as above

Claims handling expenses are often loaded in accordance to the claims frequency of the fleet.

Total expenses for fleet business are in the range 15–25%.

Investment return will act as a positive cash flow with an expected value of 3% to 7%.

Reinsurance is usually XoL to cover the bodily injury component of the risk.

Loaded as a % of premium as this is normally how it is expressed.

The cost of the cover depends on the amount purchased.

A layer £10m × £10m will be say 0.5% of premium.

Levies, MIB (Motor Insurance Bureau) and FSCS (Financial Services Compensation Scheme) need to be allowed for at current rates 2.8% and 0.8%.

Profit net of corporation tax and contingencies, expressed and loaded to the premiums as a %.

Profit margin of 5% on average over the cycle is reasonable.

Contingencies are often not determinist in nature and judgement is required over the loading to apply.

IPT needs to be added at 5%, as does any other tax, e.g. Corporation Tax

(iv) Formula to use is

$$SM(1) = SM(0) (1 + i(1 - t)) + R(1)(1 - t)(1 - d)$$

$SM(x)$ = solvency margin at time x

$R(x)$ is the gross insurance profit as a percentage of gross written premium in the period $x - 1$ to x

$P(x)$ is gross written premium in period $x - 1$ to x

i is the gross rate of interest

t is the rate of taxation

d is the percentage of the net insurance profit after tax \which is distributed as dividend

So here

$$0.4P(1) = 0.4P(0) (1 + .05 * .67) + R(1) * .67 * .75$$

$$.4P(1) = .2P(1) (1.0335) + R(1) .5025$$

$$R(1) / P(1) = 38.5\%$$

- (v) Using the same formula in a different way implies the growth allowable is -8.1% i.e. the business would have to contract in order to strengthen the solvency margin.

$$0.5P(1) = 0.4P(0) (1 + .05 * .67) + R(1) * .67 * .75$$

$$0.5P(0) * (1 + g) = .4134P(0) + .05025P(0) * (1 + g)$$

$$0.44975 * (1 + g) = .4134$$

$$g = -8.1\%$$

- (vi) Suggestion in (iv) is unlikely to be viable in a competitive market as unlikely to be able to write to a profit margin of 38.5% .

If this was to ever occur competitors would spot the opportunity and enter the market.

As there was more competition the profit margins would reduce as more companies chased the business.

Often this only turns (i.e. no new companies chase the business) when some companies decide that the profit margin is unacceptable and start to withdraw from the class of business.

Also in order to grow the premium by 100% in a competitive market the premiums charged would need to be competitive.

This is not compatible with profit margins of 38.5% .

A 10% profit margin is likely to be much more realistic than 38.5% .

The strategy in (v) is likely to be viable as the profitability is in line with that achieved in the previous year and strengthening the solvency margin in these circumstances implies we will be able to support less premium / business.

- 5** *This was a general question about the planning process for a GI business plan. Many candidates did not refer to the fact that the company wrote only MIG business and therefore produced a standard answer not specific to the question. They therefore did not score the specific marks relating to MIG business. The level of detail in many answers was missing which demonstrated to the examiners that the candidates were unaware of the complexity of business plans.*

- (i) Brief overview of main points made in the report

Description of current and likely future environment in which the company operates

E.g. with regard to competitors, regulations, etc.

Financial strategy, including Key Performance Indicators

Must include your role & purpose of report, and describe the main aims of the company.

Key measurable targets detailed, against which success of financial strategy can be measured.

E.g. with regard to market share, profitability, financial strength, etc.

Risk profile, i.e. Loan to Value ratios

Reinsurance strategy

Distribution strategy

SWOT (strengths, weaknesses, opportunities and threats) and Business Risk Analysis

The investment strategy for this class of business

Description of the actions required to achieve the Financial and Business Objectives

Income and Expenditure forecasts / projected technical account — general business and balance sheet

Intention to diversify into other classes of business and / or acquire other portfolios.

Results of scenario testing

(ii) **Business levels**

Housing transaction levels

New Business volumes

By location

By sales channel

By lender

Extent of early redemptions

Loan to value rates

Lending criteria

Types of loan e.g repayment versus fixed versus variable

Premium Income

Premium earning pattern

Dividend levels

Acquisition Costs

Commission rates
Expense levels
Profit margin

Economic

Price inflation
Salary inflation
House price inflation
Unemployment rates
Base rates
Mortgage interest rates
Investment returns on assets
Investment strategy
Proportion of non-investible assets
Net of tax and expenses

Insurance

Claims frequency
Claims average cost
For current & future business
Exposure profile
Claims handling costs
Reserving assumptions for claims outstanding
E.g. IBNR and run-off patterns
Reinsurance arrangements

External

Competitive environment
Regulatory environment
Tax

- (iii) Consideration must be given to ...
... previous assumptions made for consistency purposes.
... general economic environment for context for any changes
... competition in market
... assumptions should generally be realistic best estimate for business planning purposes.

Discussions would be had with senior managers, underwriters, reinsurers and consultants

For business levels need to consider ...
... general economic trends
... e.g. economic growth, unemployment, consumer confidence
... recent trends in housing transactions

... strategic alliances — i.e. links with which mortgage providers? And what are their projected business volumes?

... Must be considered on a regional scale due to differing underlying trends and risks

... liaise with mortgage providers with regard to past and likely future LTV (loan to value) rates.

For premium rates consider competition and strength of strategic alliances.

Acquisition costs and commission rates will depend on rates agreed with mortgage provider and any processing costs at the insurer end

Internal expenses allowance should be based upon the breakdown of expenses for the insurer.

Future dividend rate assumption will depend on strategic goals and market standards.

Inflation estimates assessed looking at historic trends, but must be forward looking and take account of current economic environment and consistent with mortgage interest rates.

House price inflation in particular will need to take account of various supply and demand factors in the housing market.

For example, house price / earnings ratio, current base rates, projected volumes of house building

For future investment returns, need to look at assets held to back technical reserves

Look at historic returns, and assess against current market environment.

Need to ensure consistent with inflation assumptions

Tax and expense likely to be easy to estimate based on existing rates, taking account of any planned future changes.

Review past claims history ...

... especially in respect of times of similar economic climate

Need to establish realistic estimate of technical reserves

Assess using a variety of techniques ranging from ...

... chain ladder, AC per claim, and other more sophisticated modelling methods

In order to establish expected ultimate claims outgo for business written to date

Compare likely future exposure with that relating to past exposure in order to allow for expected claims in respect of future business.

Estimates will need to make allowance for claims handling costs.

Allowance for future reinsurance plans will need to take account of existing arrangements and any planned future changes.

The impact of any known or likely future changes in the market, regulatory environment or corporate taxation will need to be allowed for.

A range of assumptions around a "best estimate" would be used for scenario testing

6 *This question asked candidates to consider many aspects of data relating to an unusual class of GI business. The examiners did not consider that candidates were under time pressure, this being the last question many attempted, but there was in most cases a lack of detail and hence many candidates did not show a good enough level of understanding.*

- (i) The following perils damaging property — the building. Plant and machinery may or may not be covered. (Often written as an all risks policy so perils do not need to be named)

Fire
Windstorm
Lightning
Flood
Earthquake
Collapse or structural failure
Vandalism
Escape of Water
Explosion
Subsidence
Impact
Terrorism
Faulty workmanship

- (ii) Underwriting year so risks written in that year leading to:

Policy numbers and associated first year premium increasing through the first year

Policy numbers static after the first development year

Premium amounts increasing through years 2 to 7 —
although at a decreasing rate due to falling live policy counts

Some premium development in year 8+ due to project delays

Variable volumes by year depending upon economy and number of projects started

Property claims will be notified quickly — short tailed but

The claims will occur and be notified over the seven year period so the data appears to be long tailed.

Liability claims for building defect will have longer reporting delays and be longer tailed as liability may take time to establish

The time to occurrence will also be longer as the claim cannot happen until the building is handed over to the client.

There may well be zero liability claims reported in year 0
Average claim cost increases over time as project grows

Claim costs subject to price and wage inflation

Increasing frequency over time as more perils kick in

May see effect of accumulation of claims

- (iii) Claim frequency for Liability claims lower than for property claims.
Risks similar to Long tailed business as product takes 7+ years to run off.

Premiums and rating

If premium structure fixed at outset then risk of being locked into unprofitable rates if you get your pricing wrong.

If premium structure not fixed may find policies difficult to market if different to competitors.

And construction companies are likely to want certainty of pricing

Risk of incorrect valuation of work completed / to be completed

Risk that you write business at the bottom of the market cycle to maintain market share and under-estimate the true cost of doing so.

May not be able to recover fixed costs as per policy expenses rise.

Underpricing leading to higher volumes of business and strain on resources

Overpricing and losing business and therefore do not cover fixed expenses

Default in receipt of premiums

The extent to which past claims experience will be relevant to the future is a risk in pricing the product. Due to:

Inflationary changes in cost of claims higher than expected

Uncertain claim sizes and frequency

Changing construction methods/products/machinery

Construction market cycle will affect the cost of claims.

Claims Reserves

Uncertain claim sizes and frequency

Past inflation and other trends may not be repeated in the future

Which may make estimated ultimate claims too high or too low

Too Low — feeds back into pricing and may sell policies too cheaply

And will have to increase reserves later which may put financial strain on the company.

Too high — makes business look less profitable, may take a wrong business decision and cut back on profitable business

And will feed back into pricing may price policies too dearly and volumes may suffer.

Tying up capital which could be put to better use.

Will not know about the impact of catastrophic events on a given underwriting year until exposure is finished.

Failure of reinsurer

Catastrophes will affect many underwriting years — up to 8

(iv) (a) bordereau

A detailed list of premiums, claims and other important statistics (e.g. largest risks and dates) provided by ceding insurers to reinsurers, so that payments due under a reinsurance treaty can be calculated.

Small claims are often provided as a block, details are only given routinely for large claims, above an agreed threshold.

(b) Data provided most probably only 6 monthly so frequency of observation and reporting delays are the main difference.

The reinsurer will not be able to see premium and claim movements at intervals shorter than 6 months.

Claims which are reported to the insurer just into the start of a new period will have an **additional** reporting delay of 6 months

There will be a short delay between the close of a 6 month period and the reinsurer getting the data — to allow for processing time and the handover process.

Additionally, in a bordereau small claims are often aggregated so that although the reinsurer may know that there are n claims included, the reinsurer will not be able to investigate the attributes of individual claims.

Premium definition may be different e.g. gross or net of commission

Some claim amounts will change several times in the period — the reinsurer will not see all the claim movements

E.g. A claim may be made which then reverts to a nil claim. The reinsurer may never know about the claim as there may be no obligation on the insurer to report nil claims.

END OF EXAMINERS' REPORT