

REPORT OF THE BOARD OF EXAMINERS ON THE EXAMINATIONS HELD IN

April 2002

Subject 303 — General Insurance

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The examiners are mindful that a number of interpretations may be drawn from the syllabus and Core Reading. 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.

The report does not attempt to offer a specimen solution for each question — that is, a solution that a well prepared candidate might have produced in the time allowed. For most questions substantially more detail is given than would normally be necessary to obtain a clear pass. There can also be valid alternatives which would gain equal marks.

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Chairman of the Board of Examiners

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- 1** *On the whole, this question was poorly answered by many candidates. Although substantially bookwork, this question required candidates to pull together a broad range of points. Some candidates focused too much on one of either Expenses or Investment, rather than covering both in detail. The examiners were additionally looking for some application of the details given in the question i.e. referring to the small company; some candidates did this well.*

Expenses

Commission is normally expressed as a percentage of the premium paid and so Only possible uncertainty is if different types of intermediaries are paid different levels of commission.

In this case a change in the mix of the source of business could result in actual commission payable being different to that projected even though business volumes are in line with expectations.

Change in staff and accommodation costs as the business increases/decreases.

This could be particularly relevant for a small company as the decision about when to change premises etc. can significantly increase costs.

Changes in legal and professional costs. No control, affected by supply and demand

Changes in the rates of inflation that affect expenses, e.g. medical costs, salaries

Using an expense allocation that is not appropriate leading to anti-selection

Volumes of business different to expected and hence different contribution to fixed expenses

Mix of risks different to expected

More relevant for small company as fixed expenses higher proportion of total

Claims expenses higher than expected

Business risks which affect expenses

Investments

Premiums take credit for expected investment performance of investments held to meet liabilities in respect of the business.

There is uncertainty regarding the performance of these assets income and gains.

- Market conditions worsen
- Proportion of investible assets less than expected
- Claims paid faster than expected — or any other mismatching comment
- Forced to realise assets at an unfavourable time
- Limited diversification of investments for small company
- Investment expense higher than expected

- Poor investment management
- Tax
- Default risk
- Investment legislation

2 *This was a bookwork question for which a well prepared student could score maximum marks.*

For part (i)(a), the examiners were surprised by the number of candidates who could not describe Employers Liability benefits, which is contained within core reading. Some candidates mistook “rating factors” for perils in part (i)(b). Part (ii) was reasonably well answered.

(i) (a) Benefits

Employers Liability insurance indemnifies the insured against legal liability to compensate an employee or their estate for bodily injury, disease or death suffered owing to the negligence of the employer in the course of employment.

(b) Perils

accidents caused by the negligence of the employer or other employees

e.g. safety guards
exposure to harmful substances
e.g. chemicals, coal dust, asbestos
exposure to harmful working conditions
e.g. loud noises, repetitive strain, stress.

(ii) Rating factors

Payroll, no of employees
Type of industry or occupation
Previous claims experience
Location of the workforce
The materials handled
The processes involved
Turnover
Size of deductible
Level of staff training / score risk assessment
Provision of first aid facilities

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This question was generally well answered.

In part (i), some candidates described motor business as short tail and did not discuss the suitability of the investments in terms of matching bodily injury claims. The weaker candidates talked about the need for liquidity whereas the stronger candidates recognised that premium income would be sufficient to pay most claims in the short term owing to the growing account of the business. Part (ii) was well answered.

(i) Would want to maximise return subject to meeting liabilities as they fall due

Rapidly growing => size of free reserves relative to written premium and statutory solvency may be under pressure

Different matching considerations for vehicle damage and bodily injury

Balance of these liabilities depends on type of policies written (e.g. comprehensive vs third party liability)

Vehicle damage claims reported and settled quickly

Bodily injury claims longer tail

Cash is liquid

....and has stable capital value (good for solvency)

.... but does not provide inflation protection for either the property damage claims or the bodily injury claims

Index linked government securities provide some inflation protection

....but inflation affecting bodily injury claims in particular will not necessarily correspond with the type of inflation underlying the index

Can get ILGS with different terms

...so can try to match tail of liabilities

ILGS capital values can be volatile and may not be suitable if solvency under pressure

However marketability of assets not an issue as can pay claims out of premiums currently being received but may depend upon currency of assets and liability

Risk of default with both cash and ILGS is low

Value for money: would expect other asset classes to produce higher returns over the longer term e.g. equities

So would consider using other asset classes for matching the free reserves

However other assets may not be appropriate if there is then a currency mismatch

Different taxation rules for different assets may affect decision

May depend upon any statutory solvency test

May be compulsory type of investment

- (ii) Restriction on the amount and type of certain types of assets that can be taken into account when assessing solvency

Custodianship of assets

Prevention from holding certain assets

Prescription to hold certain assets

Requirements to hold mismatching reserves

Specify asset valuation methodology

Requirement of investment manager to be experienced/take professional advice

Forced disclosure of investment policy

Specification of minimum solvency margin

- 4** *The examiners were pleased by the standard of the answers to this question. Candidates seemed to apply their knowledge well in answering part (iii).*

- (i) Calculate a risk premium per policy
 - Select rating factors
 - Determine premiums using experience rating procedures
 - Estimate the effect of changing the level of cover by changing the levels of deductibles
 - Demonstrate the effect of reinsurance
 - Estimate the likely variability of claims experience
 - Examine effect of actual versus expected claims experience
 - Estimate the possible effect of industrial diseases on the reserves
 - Produce reserve estimates
 - A check against case estimates
 - Assess the degree of solvency
 - Allocate capital to different classes or categories of business
 - Financial planning
 - Workload management / staff planning
 - Assess profitability of different classes
 - As part of Asset Liability Model to set investment policy

- (ii) Each of the parameters in a deterministic model have fixed values
The model produces results in the form of a point estimate
Possible to sensitivity test the results of a deterministic model by running the model with different parameters values
Some of the parameters in a stochastic model (e.g. number of claims or claim amounts) are allowed to vary and have their own distribution function
A stochastic model must be run many times using a random sample from the distribution functions
The model produces results in the form of a probability distribution
- (iii) Time and manpower available: stochastic models are more complex and time-consuming

The nature of the parameters within the model...
...e.g. stochastic models are more effective in allowing for volatility in asset values
The availability of data: there may not be sufficient data to permit the fitting of distribution functions with any level of certainty
The need to be able to explain the model and communicate findings e.g. to those with less modelling experience; stochastic models can be more difficult to explain
Purpose of the investigation
Deterministic automatically done to get stochastic
Current procedures
More informative: any additional information obtained by using a stochastic model may not be useful
e.g. reserving: requiring only a best estimate reserve for the accounts...
or a reserve that is likely to be adequate in 95% of possible outcomes

5 *The answers to this question were on average disappointing. Many candidates wrote out a lot of bookwork without relating their answer to the details given in the question.*

Some candidates assumed that the Board of the company was correct in its assumption about the cause of the poor profitability. These candidates therefore focused on the impact of the change in rating factor without considering other drivers. Some candidates assumed the Board was incorrect and did not discuss the impact of the change in rating factor at all. Those candidates who considered a range of factors scored highest.

Need to investigate the following:

Underwriting profitability

- to check if poor results are due to quality of underwriting

- look at underwriting procedures and guidelines and adherence to them

Claims analyses. E.g. multiple regression, etc. using both the old and new factor.

- to investigate the effect of the change in rating factor

The effects of competition on persistency e.g. lapse rate investigation

to see if the change in approach 5 years ago mirrored those made by competitors or has there been anti-selection.

Has the insurance cycle affected the results
Compare with market experience in respect of ULR
Compare premiums required with premiums charged for deliberate undercharging
Has there been an increase in competitive pressures, through either more players or lower premiums (soft market)
Underwriting performance on homogeneous cohorts of business
- to check for any adverse selection
Investment performance against peer groups, benchmarks and past performance
- to check if in line with targets / expectations
Effects of any internal changes
E.g. Change in sales medium, commission rates, changes to internal processing, changes to claims handling, etc.
- To ensure various expenses are in line with expectations.
Effects of any external changes on profitability.
E.g. Tax, legislation, solvency requirements, road traffic factors, etc.
- To identify if poor results due to unexpected high claims
General claims trends.
E.g. Unusually large claims, high frequency, catastrophe events, etc.
- To see if due to natural random variation
Effectiveness of reinsurance arrangements
- to see if due to inappropriate cover
third party / reinsurance bad debt
Mix of business
- to investigate whether poor performance is due to poor coverage of overhead and other fixed expenses. Different cohorts will have different contribution rates
Coverage and policy wording
- to see if any changes in premium were in line with the resulting changes in claims experience.
Adequacy of reserving / changes to reserving practices
- The level of reserves may have been set at increasingly prudent levels.
Any changes in methodology of reserving
Any strengthening of prior years reserves

6 *Part (i) was well answered.*

Despite a similar question in the September 2001 paper, some candidates struggled to describe the common insurance products. Most candidates wrongly assumed that because fixed benefit products were not currently offered by the insurance company, they would not be appropriate for the industrial company. Several candidates confused the names of different products (e.g. pecuniary loss and fidelity guarantee).

In part (iii), some candidates wrote at some length about rating factors rather than discussing more general factors that would influence the extent to which the company can insure the risks.

Those candidates who applied the details in the question, rather than describing every type of reinsurance contract indiscriminately, scored better on part (iv).

The stronger candidates were able to distinguish between the considerations of the insurance company in (iii) and those of the reinsurance company in (v).

- (i) The company must have an insurable interest in the risk being considered.
The risk must be of a financial and reasonably quantifiable nature.
Also, ideally the risks should be independent of each other
Should be an ultimate limit
Should minimise moral hazard
And the probability of incidence should be relatively small
- (ii) Employers liability
 - Indemnifies the insured against legal liability to compensate an employee or their estate for bodily injury, disease or death suffered, owing to negligence of the insured, in the course of employment.

Public liability

- Indemnifies the insured against legal liability for the death of or bodily injury to a third party or for damage to property belonging to a third party, other than where covered by other liability insurances.

Fleet motor 3rd party liability

- Indemnifies the insured against compensation payable to third parties for personal injury or damage to their properties.

Product liability

- Indemnifies the insured against legal liability for the death of or bodily injury to a third party or for damage to property belonging to a third party, that results from a product fault.

Property (General)

- Indemnifies the insured against value of loss or damage to the property or its contents, subject to any limits or excesses.

Commercial Property

- resulting from pre-specified perils — E.g. Fire, storm, lightning, flood, theft, explosion, etc.

Fleet motor property

- resulting from accidental or malicious damage, fire, theft, etc.

Marine & Aviation property (if oil industry then own tankers etc.) and Goods In Transit

- resulting from fire, explosion, jettison, piracy, etc.

Professional Indemnity

- if professionals in the company are negligent in the provision of their services

Directors and Officers

- for protection against company being sued for acts D&O performed

Fixed Benefits

- for medical benefits / sickness scheme

Pecuniary Loss

- Protects the insured against bad debts or failures of a third party

Fidelity Guarantee

- covers the insured against financial losses caused by dishonest actions by its employees

Business Interruption

- indemnifies the insured against losses made as a result of not being able to conduct business

Other valid types e.g. Project Insurance in case project to expand costs more than expected

- (iii) The extent to which risks are already covered for this company
The extent to which similar risks are covered in respect of other companies.
Relationship with insured and past profitability
Likely profitability of additional business
How will the cover be structured? Will the company be looking for a multi-year contract?
Any other potential concentrations of risk
- by class of business
 - geographically
- Current level of free reserves. What scope is there for new business.
Reinsurance / co-insurance arrangements in place
- Do these risks fall within existing treaties
 - If not, how easy will it be to arrange additional cover, facultative or additional treaties
- Any legislative requirements / restrictions
The Board's attitude to risk
The potential for long-term involvement/desire to maintain existing involvement
Current classes of business authorised
Willingness to extend classes authorised to write
Business strategy
Staff expertise in areas of potential insurable risks
Competition — clearly this would bring in a considerable volume of business / premium income
What data is available to assess the risks to be insured
- Large company, so quota share treaties unlikely to be used
Surplus may be needed for large commercial property risks if insurer does not write much of this business
Need to determine retention and number of lines for each risk
However, likely to use the full range of non-proportional reinsurance products available.
XOL policies cover the insured for losses arising above a pre-specified lower limit up to a pre-specified upper limit
Risk XOL relates to single risks
Aggregate (clash) relates to accumulations on multiple risks, due to a single event, or from a single cause through time
Cat XOL relates to losses arising within a pre-determined time span from pre-specified events
Stop Loss relates to cohorts or portfolios of risks
These policies will often have a Stability Clause (particularly for liability business) — i.e. indexed limits

Risk XOL is likely to be arranged to cover risks such as marine & aviation property damage.

Aggregate XOL may be arranged and include several layers;

- for each class of business separately
- aggregated over several-classes
- aggregated by insured

Place business with different insurers to spread risk of reinsurer default

Cat XOL may be arranged to cover against specific pre-defined events, such as Hurricane, Earthquake, etc.

Stop Loss may be arranged, though for a large multi-national it may not be available

- (v) If the risks fall under existing treaties then they will be automatically covered.

However, if not...

The current relationship they have built up with your company

Their confidence in the ability of the multi-national's underwriters to accurately assess the risks

Confidence in insurer to deal with claims in acceptable manner

Influence of business written by insurer

Availability of reinsurance for business it accepts

Availability of profit sharing arrangements

The quality of data provided

The cover already provided in respect of:

- the insured in question from all cedants
- other risks with your company
- each class of business for all cedants
- within the company's geographical regions of operation

Available capacity

Claims experience in respect of each of the classes' risks

Whether it is authorised to cover all of the classes required

- 7 *This question was a reasonably good indicator of those who understood the subject of claims reserving and could apply their bookwork knowledge to a non standard class of business.*

Part (i) was mostly well answered. A few candidates discussed why different types of claims reserve were required rather than why reserves would be calculated.

There were a number of errors in part (ii):

- *The most common error arose from candidates using a different definition of a claim occurring to that clearly given in the question. This often revealed a lack of understanding of an IBNR claim.*
- *Consequently, some candidates talked about the potentially long delays between a mortgage default and the sale of the property and incorrectly concluded that IBNR reserves would need to be large.*

- *Many candidates incorrectly described MIG as long tail. Whilst the exposure period is very long (theoretically up to the term of the mortgage) the reporting and settlement delays are short compared with many other classes of business.*
- *Candidates generally discussed a number of methods but did not make an appropriate selection for each type of reserve.*
- *Weak candidates suggested using the 365ths or 24ths method for the UPR.*
- *Very weak candidates suggested using case estimates for UPR or IBNR!*

Part (iii) was reasonably well answered.

- (i) Reasons reserves are calculated include:
- Determine the liabilities for the insurer's published accounts
 - Determine the liabilities for the accounts for the supervision of solvency
 - Determine the liabilities for the internal management accounts
 - Estimate the cost of claims in recent periods to get a base for estimating future premiums required for a given level of profit
 - Value the company for sale/purchase
 - Value the company for setting the terms of a merger
 - Value the company for setting performance related pay for directors
 - To calculate tax liabilities
 - To determine investment strategy
 - Determine liabilities for any profit sharing arrangement
- (ii) MIG is characterised by uncertainty and as such presents challenges for reserving.

The features of MIG are that:

- Exposure period is up to 25 years.
- However most insurers consider the exposure nil after 10 years as risk is not uniform throughout term of cover and generally reduces over time with rising house prices.
- Average claims amounts are surprisingly consistent over time for a particular lender but may vary by lender owing to different lending and repossession practices.
- Hence the loan acceptance terms of the building societies are an important factor and the reserving should be done at this level as well as top down to check that performance is comparable to what would be expected given the underwriting standards.
- Most of the variability of claims experience is based on the number of claims.
- In particular circumstances, e.g. growing unemployment, increasing mortgage rates and falling house prices, catastrophes can occur over a long period.
- As such any UPR may not be enough to cover future claims on business already written

The likely reserves for this class of business are:

Unearned Premium Reserve

Additional Provision for Unexpired Risks

Outstanding Claims reserve

Claims expense reserve

IBNR

IBNER

Maybe Statutory Claims Equalisation Reserve

Catastrophe reserve

Case Estimates and various triangulation methods can be used to estimate such reserves both by accident and underwriting year.

Do average costs and numbers of claims separately.

Split data by lender, region, type of mortgage, loan to value ratio

UPR

Use underwriting triangles of earlier years claims experience — inflation adjusted chain ladder to see pattern of claims and earned premium accordingly.

Patterns may change from one underwriting year to another owing to changes in economic conditions.

Outstanding Claims Reserves

Claims are normally settled very quickly and hence likely that only a few will be outstanding. Hence the most likely approach is case estimates

Claims Expenses

Likely to be a percentage loading of any claims costs.

IBNR

Information may be available from lenders as to which properties have been sold but not yet notified to the insurer and thus likely to lead to claims. In which case a count of number of claims can be taken and an assumed average cost adopted based on recent experience. Alternatively calculate as a percentage of outstanding claims or use delay table method

IBNER

As stated, average costs are fairly consistent and as such the need for an IBNER is unlikely. In fact a negative IBNER may arise if mortgagees are pursued and recoveries for bad debts are made

Statutory CER

Rules for calculation likely to be set by Regulatory authority e.g. a percentage of premium is transferred to CER providing loss ratio is below a certain amount otherwise a transfer from CER

Catastrophe reserve

Company may set up a catastrophe reserve which may be in line with its premium rating basis such that for years when no catastrophe occurs whatever the loading in the premiums for catastrophes is transferred to the reserve.

Re-opened Claims Reserve

Likely to be zero (or in fact negative) so no method required

APUR

For business written to date need to assess if UPR is sufficient to meet cost of claims and expenses for the unexpired period of risk.

Need to project likely number of claims and average costs. Could use the B-F method as this takes the belief about the claims development for each year and modifies it only slightly unless there are large deviations in the future from the projections.

Easy to allow for some years having different development patterns to others.

Alternatively, if available, could model claims arising from arrears cases in the past and based on current arrears cases project future claims resulting from business already written.

(iii) Unearned Premium Reserve

This is likely to be the largest reserve given that a claim only occurs once the house has been sold, and exposure can last for up to say 25 years.

Additional Provision for Unexpired Risks

The size of this reserve depends on whether business written in the past has been written at adequate rates.

In particular the stage of the economic cycle when business was written and now will have a big impact upon the size of this reserve

If past rates have been inadequate then the APUR could be the largest reserve.

Outstanding Claims reserve/Claims expense reserve

Will be small as the time between a claim occurring and paying it will be small.

IBNR/IBNER

IBNR will comprise of houses that have been sold but the insurer not informed. Very small. IBNER will be smaller than IBNR and most probably nil.

CER/Cat reserve

Both likely to be small compared to the UPR. Although the Cat reserve may be large if built up over many years because when things go bad they go bad in a big way.