

EXAMINATIONS

September 2002

Subject 303 — General Insurance

EXAMINERS' REPORT

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.

K Forman
Chairman of the Board of Examiners

26 November 2002

- 1** *Many candidates mentioned points relating to only if the premiums were too high or too low and did not go into the greater detail which the examiners were looking for. As a result of this most candidates did not score many marks on this question.*

- (i) Need to know the potential variability in the results produced from analysing the data.

Different data problems will affect the results in different ways and to a varying extent. Understanding the nature of the problems will help in determining what allowance must be made.

This will help to ensure that premiums are set at an appropriate level to ensure desired profitability is achieved. If the premiums are set too high then likely loss in business. If the premiums are set too low then could get selected against.

At the high level, this will help to ensure the right decisions are made.

Helps in determining the cause of the data problems which can in turn help to decide what actions to take to prevent such problems arising again in the future.

Helps in finding improvements to the data capture methods.

- 2** *The answer given below in part (i) below relates to the Core reading definition. The examiners accepted also an alternative definition which they thought was also appropriate – policyholder acts in a way that makes the insured event more likely just because they have insurance. In this case marks were given in part (ii) where the candidate gave reasonable and relevant examples. Some candidates did not read the question carefully and gave examples not relating to household buildings and contents business.*

- (i) The risk that an insured may attempt to take unfair advantage of the insurer, for example by suppressing information relevant to the assessment of risk or by submitting a false claim.
- (ii) The homeowner may under-declare the rebuilding cost of the home at proposal.

This may simply be through failing to provide accurate information at purchase.

Or may be due to failing to advise the insurer where modifications have taken place.

E.g. Extensions, loft conversions, etc.

With regard to contents insurance, the homeowner may deliberately under-declare the value of their contents at proposal

Or may fail to revise the figure through time where affected by inflation

The insured may fail to notify of changes to personal circumstances relevant for assessing the risk.

E.g. The home may now be empty during the day

The homeowner may now work at home.

Or may have provided misleading information regarding the security measures at the property.

The homeowner may submit a false claim

Or inflate valid claim, perhaps including items that were never there or were not damaged

The homeowner may have failed to disclose risk related information on the proposal form

E.g. Past claims, etc.

Fraud, arson and deliberate damage

Household security, e.g leaving window open when gone out

- 3** *Most candidates made a reasonable attempt at this question but only the better candidates managed to get enough points to earn well in excess of half marks. Some candidates concentrated upon the choice of assets and thus failed to mention many of the points which the examiners were looking for.*

Mix of assets held to back the required level of reserves (including free reserves)
- This will be important in order to assess the likely future returns, investibility of assets (including premium payment pattern), risk of default.

Expected level of investment return
- when the expected rate of return is low, this component is less important.

Term of policy / Exposure profile
- more relevant where policy term > 1 year and significant portion of exposure is later in the policy term

Length of tail of the business being underwritten
- long-tailed means more relevant

The capital allocated to back this particular part of the business

- how is the capital allocation determined
- just technical reserves, with free reserves elsewhere, or does it include a portion of the free reserves

Extent to which assets held are mismatched to the liabilities

- mismatching increases the level of risk so a downward adjustment to the assumed return may be appropriate.

The degree of uncertainty in the expected level and timing of claim payments

- increased certainty means less of a reduction for mismatching

Any legislative factors that affect the extent to which such allowance can be made.

Consistency with other assumptions, especially inflation

Investment expenses.

Tax treatment of investment returns

- any allowance should be made net of tax

4

The examiners were expecting the candidates to discuss liabilities as detailed below. The examiners considered the cases where candidates had interpreted the meaning of liabilities as UPR etc. Marks were awarded for sensible remarks in these cases. Most candidates did not find this question difficult and hence scored reasonably well. The main reason for candidates not gaining marks on this question was owing to not mentioning the difference between property and bodily injury type liabilities.

(i) (a) Liabilities

- Property part is short to medium term
- Linked to price inflation
- Less variable amounts than bodily injury part
- Generally smaller amounts than bodily injury part
- Bodily injury part has more variable term than property, some very long term
- Delays occurrence-notification and notification-settled
- Earnings linked
- Court award inflation
- Prone to court award accumulation
- Occasionally very large bodily injury claim
- Susceptible to moral hazard (e.g. slip/ trip)

(b) Assets

- Consider property and bodily injury separately

- Property is short tailed so, same currency, short-dated government securities, other fixed interest, cash
- Bodily injury is longer-tailed, real, for which equities may offer the best match.
- However, will need to match short term claims in the same way as property unless there is enough cashflow to pay out of premiums.

(ii) decide to match / not by:

- size of company
- absolute size of free reserves
- size of free reserves cf GWP
- size of free reserves cf ultimate liabilities in a year
- size of free reserves cf absolute liabilities at a point in time
- existence of any required statutory minimum
- reinsurance arrangements
- liquidity of free reserves
- attitude to risk of the company
- statutory regulations e.g. admissability
- availability
- expected return on assets
- value for money
- desire to diversify / security considerations
- extent of positive cashflow

5 *Most candidates answered this question well. The main reason that most marks were not gained was owing to the lack of comment in part (iii) for the possible need of some case estimating for e.g. subsidence claims.*

(i) These terms relate to the determination of reserves for outstanding claims.

Case estimation — each outstanding claim is individually assessed to arrive at an estimate of the total payments to be made.

Statistical estimation — outstanding claims are assessed “en masse” in relatively homogeneous cohorts, based on historical trends and patterns, adjusting for known or anticipated future changes.

(ii) Case estimation is:

- labour / time intensive
- Relies on skilled staff
- subjective
- suitable where claims are low frequency / high severity
- suitable where the book of business is small
- suitable if the company is relatively young, as there may be insufficient history for statistical estimation, especially for long tailed business

- are suitable where there are significant volumes of qualitative information relevant for setting an accurate reserve, which require skilled interpretation by an expert.
- this method can use all the available data including estimated inflation
- more likely to spot errors on individual claims
- it is difficult to ensure consistency through time and between assessors
- Separate estimates for IBNR are needed
- different statistical estimate methods allow for IBNR in different ways
- The reverse may be true for statistical estimation
- Statistical estimation may give inaccurate results if the past experience contains unusual features unlikely to be repeated e.g. catastrophes and large claims.

- (iii) Book of business is large, which means that case estimation may be impractical and costly.

Household buildings insurance is not high frequency in the same way as contents insurance, so statistical estimation may not be very reliable.

However, for a large book of business, the volume of claims may still provide a sufficiently sound basis for statistical estimation.

Average Cost distribution is quite skewed. So for the lower frequency / high severity claims statistical estimation will almost certainly be less accurate. Given the information above, statistical estimation for the majority of claims is likely to provide the most accurate estimate.

However, for the low frequency / high severity claims (e.g. subsidence), some case estimation may be retained

Depends upon how long the company has been in operation.

- 6** *The solution to part (i) is the approach that the examiners hoped most candidates would use. In fact very few candidates used this approach or any other approach which the examiners considered reasonable with a reasonable set of assumptions. Most candidates failed to recognise that of the business written in each year that 40% was earned in that year and that 60% was earned in the following year thus making their assumptions invalid. Of those candidates who attempted this part of the question many stated that the gross and net loss ratios were the same and thus merely repeated the information in the question, although a few candidates realised that this must be wrong for 7 marks! The main problem appeared to be able to distinguish between the occurrence year and underwriting year concepts.*

Even though some candidates failed in producing a reasonable solution to part (i) they did go on to produce a reasonable answer to part (ii) for which there are many reasons why the results in part (i) are unlikely in practice.

Part (iii) was answered well by the better candidates but some were put off by the first two parts even though the third part could easily be answered without attempting the other two parts.

(i) Assumptions

- All policies are earned over a one year period
- The terms of the quota share have remained constant over the period 1.1.98 to 31.12.2001
- As the company began trading 1.1.98 all premium earned in 1998 was written in 1998
- All business written in a year has same loss ratio

Calculation

Note NIA is net incurred claims on accident year basis, and NIU is net incurred claims on underwriting year basis.

Note that premium is earned 2/5 in the year it is written and 3/5 in the next year

For 1998 NIA are $10 \times 1.5 = 15$, and NIU are $25 \times 1.5 = 37.5$. Hence net loss ratio on an underwriting year basis for 1998 is 150%.

For 1999 NIA are $35 \times 1.3 = 45.5$, as $37.5 - 15 = 22.5$ of these claims were on business written in 1998, then 23 claims occurring in 1999 on 20 earned premium, i.e. claim ratio of 115%. Hence net loss ratio on an underwriting year basis for 1999 is 115% and thus NIU are $50 \times 1.15 = 57.5$.

Similarly for 2000 NIA = 70, $57.5 - 23 = 34.5$ in respect of business written in 1999, thus 35.5 for business written in 2000 on 40 premium, hence claim ratio of 88.75%.

For 2001, NIA = 105, $88.75 - 35.5 = 53.25$ i.r.o. 2000 and 51.75 i.r.o. 2001 on 80 premium, i.e. claim ratio of 64.69 and NIU of 129.375.

	1998	1999	2000	2001
NIA	15	45.5	70	105
NIU	37.5	57.5	88.75	129.375
NWLR	150%	115%	88.75%	64.69%

As QS reinsurance is assumed to remain constant the GWLR = NWLR

Notes

NWP = net written premium

NEP = net earned premium

NWLR = net written loss ratio

(ii)

- Rapidly decreasing loss ratio and year on year growth are unlikely to happen at the same time
- Household insurance is a commodity market and so usually sells on price
- So to build a book quickly you have to be cheaper than the competition

- Override or ceding commissions may mean that net ULR does not equal gross ULR
- Unrealistic that change premiums only once a year
- Percentage reinsured likely to change over the years
- Household profits tend to fluctuate with the occurrence/non-occurrence of weather events
- Any other comments about specific assumptions in the question not being realised in practice

So a smooth(ish) increase in profits is unlikely

(iii) Effects are:

- Fast growth only available by writing business at premiums less than the market (unprofitably?) or having a unique customer proposition.
- Reserve for claims / premiums would increase especially if rate are unprofitable
- New business strain could be considerable
- Any imposed SMSM would mean capital considerations could restrict the future rate of growth. If near the SMSM brokers may stop placing business, even policyholder may hear that the company is “not safe”
- Unless there is enough capital to comfortably support growth then plans will need to be scaled back
- May change investment strategy
- May change reinsurance strategy
- May increase staff accommodation, IT systems etc.

7 *Most candidates had few problems with most of this question. Parts (i) and (ii) were generally well answered. Several candidates could not perform the calculation required in part (iii). In particular, although the question stated that the ‘company retained the maximum proportion’ some candidates assumed that the maximum was ceded i.e. all lines were being used. This error has occurred in the past which would indicate that candidates do not read the question carefully or do not understand Surplus Reinsurance. Part (iv) caused the most problems though with some candidates assuming that all the 6 claims applied to the same risk even though the question stated that the EML was different in each case. There were generally very few comments regarding the problems faced by the insurer in respect of this given arrangement even though detailed information was available from the question.*

(i) Proportional

- So claims shared in same proportion as premiums
- Treaty
- Proportion retained by direct writer may vary from risk to risk
- Usually decided by direct writer
- Subject to limits in treaty (numbers of lines / EML)
- Which may be based on sum insured or EML

- Enables insurer to write larger risks/ fine tune its exposure
- Premium paid to reinsurer will be reduced for commission (return and over-riding)
- Administration more complicated than for quota share

(ii)

- Size of risk; bigger the risk, more company will cede to A
- Uncertainty of risk, frequency and severity
- Concentration of risk for this one policy
- Extent to which it fits in with existing portfolio
-potential for accumulations through similar location of risks
-& by type of property
- prior facultative cover
- Own experience of this risk

(iii)

- EML of 2,300. Retain maximum of 500 => cede 1,800 to A i.e. $1,800/500 = 3.6$ lines. Okay as <4 .
- Therefore A pays $3,500 \times 3.6/4.6 = 2,739$.
- Net of surplus, company has claim of 761
- Of which 200 paid by B
- Lower limit for treaty C becomes $700 \times 104/100 = 728$
- Therefore C pays $761 - 728 = 33$
- And your company pays the first 500 and the gap between B and C i.e. 28 so a total of 528
- Check total payments equal 3500 and sensible comment if not
- Assuming none of the companies default
- There is only one payment made and that is 3500 at the time index is 104

(iv)

- Where EML exceeds $(4+1) \times £500,000$, as it does for risk 4 above, terms of treaty with A are not met
- In such situations, could arrange for facultative cover (either XL or proportional)
- Going forward, may wish to increase maximum number of lines in treaty with A or buy more lines elsewhere
- Need to consider whether XL excess points provide sufficient cover.
- Risk 6 has blown through the top of the programme
- C being indexed but B not being indexed creates a gap in the programme
- This could be a problem when inflation is high and should be eliminated
- Greater use of proportional reinsurance could be used to spread risk of accumulations
- Eg reciprocity to avoid geographical concentrations
- E.g. aggregate excess of loss, catastrophe excess of loss
- Reinsurers complaining about estimation of EML
- Risk of reinsurance default – use more reinsurers
- No problem with some of the claims

- 8 *Some candidates answered this question first rather than rushing their solution at the end. There was a wide range in marks on this question with the better candidates scoring over three quarters of the marks available for what was largely a bookwork type question.*

- (i) The uncertainty arises as the outcome of business already written and the premiums to charge in future periods.

Claims

Motor insurance claims are subject to wide variability.

Especially as a small insurer there is uncertainty as to whether changes in claims costs year on year are due to changes in the underlying risk or merely random variation.

Variability will exist in terms of frequency, amounts, incidence and cost of handling claims

Claims Delays

Delays from occurrence to notification result in uncertainty regarding the number and cost of IBNR claims.

Delays from reporting to settlement result in uncertainty regarding the ultimate cost of claims.

This uncertainty is greatest for the largest, bodily injury, claims especially if they involve legal proceedings.

Changes in cover

If cover is added / deleted from the motor policies there probably won't be sufficient data to make a reliable estimate of the impact of the change.

Characteristics of policyholders

If the company is aiming to attract different risks to those it has historically held the claims experience may differ from the past.

It is difficult to determine how the claims will change.

There may be opportunities for anti-selection if the premium rates do not correctly reflect the risk.

Unless there is superior accuracy in assessing the premiums which are less than the market norm (to ensure they are set at a profitable level) then through adverse selection any inadequacy will result in severe loss making.

Moral Hazard

Usage changes (e.g. fuel shortage)

Attitude to claims

Experience from the USA suggest that policyholder are starting to claim for events they would not have done so previously.

i.e. increasingly litigious society.

Crime / fraud rate

As this increases AD and theft claims may increase.
The timing of increasing crime rate is uncertain.
This will be correlated to other economic indicators.

Judicial decisions

This is often referred to as “court award” inflation. New precedents will be set involving which types of claims are eligible for compensation and how much the settlements for them are.

Occasionally new level of awards are set for existing types of claims.
This will immediately increase the average amount at which all future claims are settled.
Sometimes these decisions will be retrospective meaning that the uplift applies to all outstanding claims as well as future ones.

Legislation

Fiscal, changes in tax, cost of cars, cost of repairs
Change in cover, i.e. removing the upper limit on compensation or introducing a requirement, e.g. to pay hospital charges.
Change in law, e.g. restricting the factors that can be used in underwriting, not using driver age

Accumulation of risk

Could be exposed by business acquisition e.g. under 30's or as a small company geographically exposed by writing a lot of business near the head office, this could lead to an aggregation of claims from a weather event in the area.

Catastrophe

A flood or hurricane could lead to many claims.

Currency risks

Paying claims in other territories exposes the company to the risks of fluctuating currencies and currency mismatching if they do not hold reserves in other currencies.

Reinsurance

This is subject to uncertainty as:

- Inadequately appreciate the scale of the risks and purchase inadequate reinsurance
- Doubts about the value for money and availability of reinsurance

- For Cat whether the retention, reinstatement premium, upper limits etc. are OK
- Ability to make a recovery, solvency position of reinsurers

Policy wording

Must be precise so the only claims paid are those that the company intended to provide cover for.

Also with regard to reinsurance contracts so that the company can recover what it expects to.

Inflation

Uncertainty about future inflation especially for bodily injury claims will affect the actual profit made and hence the assessment of premium required to provide cover in future periods.

(ii) Failure of third parties for example

- Non payment from brokers
- Staff dishonesty
- Default by supplier

Timing, premiums late, recoveries late, claims early

Competition

- Products are inferior
 - Prices uncompetitive, high expenses, inadequate analysis
 - Fall behind in technology, less business
 - Prices too cheap, unsatisfactory financial performance
 - Business affected by changes in legislation which others have allowed for
 - If business costs rise as fixed expenses have to be recouped
- Data may be inaccurate / incomplete

Insurance cycle

As the insurer only writes motor business there is no opportunity to cross subsidise with classes at different stages of the cycle.

As profits increase insurers enter the market, buy market share with low premiums, market premiums decrease until losses are made. Insurers leave the market, prices increase and the market edges back into profitability.

As only write one class at the bottom of the cycle will either lose business (puts pressure on fixed expenses) or lower premiums and decrease the solvency position.

Other business risks include expenses, investment and management incompetence