

EXAMINATION

September 2006

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.

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Chairman of the Board of Examiners

November 2006

Comments

Individual comments are shown after each part question.

1 (i)

- Companies Act accounts do not show results by class of business whereas UK statutory returns show results by class and risk group.
- Companies Act accounts show figures by revenue year whereas statutory returns are divided by underwriting year or accident year.

These points are contained within the core reading, although surprisingly few candidates gained full marks on this bookwork question. A number of candidates made incorrect comments on the different levels of prudence within the outstanding claims and IBNR reserves between the accounts and the returns.

(ii) Mix of business by profession

- The ultimate loss ratios ("ULR's") may differ between, for example, solicitors, architects, brokers, actuaries, accountants, IFAs.
- This may be due to different levels of competition in these different sectors...
- ...due to different levels of risk appetite e.g. IFA professional indemnity experience has been poor in recent years due to pensions mis-selling.
- Some insurers may concentrate on only one profession
-e.g. writing solicitors business through a lineslip.
- And others may exclude certain professions
-e.g. no big-4 accountancy firms.
- Some professions may incept at certain times of the year
- ...e.g. solicitors business incepting in September/October
- which is particularly relevant to consider for a company that has only been writing since 1 July.

Size (turnover or number of partners) of assureds

- Large practices may have very different claims experience to smaller practices,
- Which is particularly true for sole practitioners.
- Large practices usually have higher fees and larger potential losses.
- Different size assureds are likely to have different risk management standards.
- Different assureds have different clients and therefore different services are provided (some are more risky).

Territory in which business written

- Lloyd's business may be different in nature to UK regional e.g. due to size of risks.
- Lloyd's business may include non-UK risks.
- US professional indemnity business in particular may perform differently to UK (e.g. due to litigation).
- Currency issues need to be considered.

Source of business

Different coverages or exclusions

Size and type of lines written

- Some insurers may write mainly primary layers whereas others write excess layers.
- Limits and deductible may differ.

Claims made vs claims occurring policy

- Business written on a claims made basis may be different in nature to that written on a claim occurring basis
- e.g. volatility of ULRs due to dependency on legislative changes.

Different underwriting philosophy

- Some insurers trying to build market share may be happier to write at a higher loss ratio.
- Underwriter may have views on quality of underwriting done by competitors.

Different rate change history

Different reserving philosophy

- Drivers for different reserving strengths may be different case reserving practices/philosophies.
- Some companies' ultimates may show a systematic downwards trend in ULRs over time for a given year of account.

Underwriting year vs Accident Year

- If written on a funded basis, business will appear in statutory returns classified by underwriting year.
- If written on a one-year basis, business will appear in statutory returns classified by accident year.
- We would prefer to use accident year benchmarks as this is consistent with company's one year accounting.
- Although 2005 accident year ULRs could perhaps be estimated by averaging 2004 and 2005 underwriting year ULRs.

Impact of exceptional/large claims that the underwriter would know about.

Size of account

- Size of account impacts credibility for benchmarking purposes.
- Smaller accounts may be more volatile in terms of claims experience.

Maturity of account

- A growing account may have different characteristics to a stable one.
- New accounts are likely to have less historical data on which to base ULR projections than more established accounts.

This question was reasonably well answered, with candidates able to generate a wide range of points. The stronger candidates were able to tailor their answer to give Professional Indemnity specific points. Some candidates appeared to be unrealistic about the information that they would expect the

company actuary and/or underwriter to know about the benchmark companies. The question asked about benchmarking for loss ratios and not for development patterns, although some answers focused on the impact on the latter. Most candidates did not explain why different claims characteristics for different professions would automatically mean different ultimate loss ratios.

- (iii) Starting point is to make a choice about which base years to use.
- Professional indemnity is reasonably long-tailed so that would lead us to place less reliance on ULR's on immature years.
 - At the end of the first development year, the incurred claims seem only to be about 40% of ultimate claims.
 - So suggest not relying too heavily on 2004 booked ultimate loss ratio.
 - Historically, it can be seen that the ULR for a particular accident year can drift over time.
 - It may be that companies book a pessimistic ULR initially to avoid poor run-off.
 - For example, the 2002 accident year ULR has reduced over time.
 - 2001 may be too old to be representative... *[the examiners accepted other sensible comments about the reducing relevance of older years]*
 - ...terms and conditions are likely to have changed alongside the premium rate changes
 - ...and there may have been a shift in the mix of business with new capacity entering the market.
 - Establish from underwriter whether there are any large losses/events that might have distorted any of the figures in the market information.
 - May use 2002 and/or 2003 accident years as starting points. *[or other sensible conclusion]*

Roll forward for premium rate changes

- Definitely need to adjust for rate changes as they haven't been flat and will therefore have a big impact.
- Need to understand from underwriter more about what the premium rate change information represents:
 -before or after allowing for claims inflation?
 -and what would a typical claims inflation assumption be?
 -before or after allowing for exposure (e.g. assured fees) inflation?
 -has allowance for changes in terms and conditions e.g. reduced coverage been made in the rate change information?
- One approach is to estimate the earned premium rate change between year x and $x + 1$ as the average of the underwriting year rate changes between $x - 1$ and $x + 1$.
- Although we would need to discuss with underwriter how business incepts and earns throughout the year.
- We may need to make an adjustment for changes in the environment, target market, longer term trends e.g. legislation, impact of the insurance cycle etc

- The table below is an example of how the ULR's shown in the 2004 returns may be rolled forward to 2005 terms, assuming premium rate changes include exposure inflation.

Accident Years	Starting ULR	Earned Rate Change From Previous Year	Inflation Assumption	ULR in 2005 Terms
2002	86%	NA	8%	65%
2003	65%	38%	8%	63%
2004	60%	18%	8%	63%
2005		3%	8%	

- This uses the most recent ULR's (from the 2004 returns) although these may be prudent for the more recent accident years
- A sensible claims inflation assumption might be e.g. 5% to 10%.
- Select the average of the 2002 and 2003 ULRs => 64% as 2004 too immature to rely on 2004 ULR at this stage (or other sensible selection and justification).
- We would need to understand the treatment of commission: is premium gross or net of commission in the statutory returns?

There was a wide variation in the quality of answers for this question. Although the question did not specifically ask for ULR calculations, the best descriptions were those that used the data provided in the question; this enabled students to demonstrate the various steps required more clearly. Some candidates appeared not to have learnt from recent SA3 questions on calculating ULR's. This is worrying given the practical use of this technique and the importance of being able to sense-check loss ratios against the backdrop of information on premium rate changes and claims inflation. Good candidates were able to use the claims development information provided in the question in order to make a judgement about which base years to use.

Some candidates went further than this part question intended and tried to estimate the effect on the loss ratio of the company having only written business since 1 July 2005. In these cases, the examiners gave some credit accordingly under Q1(v).

(iv)

- Divide PLR by ULR to get sample % developed from data on 2001 to 2004 accident years. Use the ULRs from the same returns as the PLRs in order to avoid distortions from changes in earned premium over time.
- Average development %'s across accident years, shown in the tables below

*[Note: an alternative approach to the above calculations is to divide the PLR or ILR by the **latest** estimate of the ULR in each case, rather than the ULR estimated at previous year-ends. This approach assumes that the earned premium in the denominator is consistent over time (i.e. no late bookings or misstatements of premium). This alternative approach was given full credit by the examiners only if that assumption was stated.]*

Paid cumulative development percentages

Accident Year	Development Year			
	1	2	3	4
2001		16.8%	35.0%	69.7%
2002	5.5%	24.7%	44.2%	
2003	10.0%	35.4%		
2004	3.3%			

Average: 6.3% 25.6% 39.6% 69.7%

Incurred cumulative development percentages

Accident Year	Development Year			
	1	2	3	4
2001		70.4%	85.4%	96.7%
2002	39.6%	75.3%	88.4%	
2003	41.4%	70.8%		
2004	38.3%			

Average: 39.8% 72.2% 86.9% 96.7%

Comments on reliability of results

- Development year 4 position is based on only one sample point (relating to 2001) so this is likely to be less reliable.
- For incurred claims, there seems to be a reasonable amount of consistency between sample points at the same development period => reliable.
- For paid claims, there appears to be some evidence of claims speeding up:
- ...for second development year, % developed goes up from 16.8% on 2001 accident year to 24.7% on 2002 and 35.4% on 2003.
- ...for third developments year, % developed goes up from 35.0% on 2001 accident year to 44.2% on 2002.
- Using averages won't reflect any such trends.
- => May prefer to use incurred patterns rather than paid patterns (especially as incurred is more mature).
- However incurred claim development percentages depend on consistency of case estimate strength.
- The existence of the tail factor in the projections increases uncertainty.

The numerical parts of this question were not very difficult and a lot of marks were available for good quality comments on the results. There were many candidates, however, who failed to gain many marks on the numerical parts or who were not able to make observations on key features of the development

patterns. Some candidates tried to adjust the data for premium rate changes, which was unnecessary. Some candidates gave development of loss ratios which was not requested.

(v) Generally

- One key factor is speed with which claims are expected to develop.
- Would expect to move gradually from benchmarks to company's own data as time goes on.
- Perhaps using a Bornhuetter-Ferguson type of approach.
- Likely to rely on incurred claims data before paid as paid will be too immature initially.
- Depends on confidence in own case estimation.
- Unlikely to rely on paid chain ladder for the first three development years as less than 40% developed.
- Benchmark claim development patterns suggest that incurred claims are reasonably mature by the end of the second development year and hence it likely that at least some reliance would be placed on chain ladder from this point.
- Likely to recognise differences between company and market experience earlier if company experience appears worse than market's.
- Would also treat very large losses separately.

As at 31 December 2005

- Only need to calculate IBNR in respect of 2005 accident year.
- May want to calculate 2006 ULR to check UPR is sufficient to cover unexpired risk.
- 2005 is not a typical accident year as business only written from 1 July 2005.
- even if business written evenly between 1 July and 31 December, earnings will not be even over the second half of 2005.
- therefore average accident date likely to be biased towards November rather than mid-year.
- Our 2005 accident year is even less mature \Rightarrow own claims experience multiplied by market development factors will underestimate ultimate.
- Even if use Bornhuetter-Ferguson, far bigger weighting would go to independent (market) ultimate loss ratio than to chain ladder.
- So rely heavily on market ultimate loss ratio as claims to date of little use (except if the account suffers large losses or very bad experience).

As at 31 December 2006

- 2006 accident year will still not have an even earning pattern as missing accidents relating to business written in the first half of 2005
-plus likely that business volumes still increasing over 2006 as company establishes itself
- Therefore average accident date is likely to be biased towards second half of year.
- And it will not be easy to compare actual claims developments on 2005 and 2006 accident years with those from the benchmark data.

- So likely to give significant weight to market loss ratio on both accident years.

The strongest candidates understood that both the accident years would be more immature than a typical accident year because no policies were written in the first half of the first underwriting year. A number of candidates talked at length about the validity of benchmarks but did not appreciate that there was little alternative but to rely on them.

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(i) Advantages:

- When an accident involving a total loss of the vehicle occurs, road risk insurance companies will usually pay out the actual value of the vehicle.
- This will usually be considerably less than the original purchase price of the vehicle due to market value depreciation within the UK motor sales market.
- Depreciation of the vehicle market value will be particularly steep in the first three years of a vehicle's life before slowing down thereafter.
- Vehicle purchasers will have financial peace of mind in the knowledge that they will be covered in the event of accidents where they were not to blame or driving at the time (e.g. theft of the vehicle) or involved complete or irreparable damage to the vehicle (e.g. fire, total write-off of vehicle in a road accident).
- Road risk car insurers will not take into consideration any outstanding loan on the vehicle purchase.
- Holding gap insurance cover will assist the policyholder in paying off any outstanding amount of the loan rather than be in a position of negative equity.
- The policy will pay out in full if the vehicle is written off by an untraced driver or failure to pay by the owner's insurance cover for another reason.
- If the cover is free then this is good for the purchaser, but the cost may already be included in the cost of the vehicle.
- Premiums are known in advance in terms of level and period of payment so will assist in financial planning (or could be regarded as an additional monthly element to budget for in addition to road risk premium and loan repayment).
- No need to argue with the motor insurer on the value of the car.

Disadvantages:

- The rates charged for gap insurance are often high.
- The cover may be of limited use to a car purchaser who changes his car frequently, e.g. once a year.
- Value depends on risk appetite of car purchaser: he may not wish to pay for something considered unlikely.
- No benefit is provided if there is a bad accident but the car is not written off.
- The customer may not want to pay three years cover in the first year.
- There is no value in the first year if the motor insurer gives "new for old" cover in the first year

- The amount recovered in total from the gap policy and private car insurance would not be sufficient to replace the car with an equivalent new model due to price inflation.

This question was well answered by many candidates.

(ii) Risks and mitigants

- The main risk is that the premium rates charged under-estimate the risk.
- This is a particular problem here as the premium assumptions are based on information which is difficult to get...
- ...and the premium needs to cover 3 years of exposure.
- The lack of rating factors suggests possible anti-selection could occur on this scheme, particularly if the cover is optional.
- Mitigate by stricter underwriting.
- For example, different age groups are more/less prone to total vehicle write-off accidental damage claims so should be charged more than those age groups which have a lower total loss frequency.
- Similarly different makes of vehicle have different depreciation levels resulting in very different claim severity.
- Similarly theft claim frequency is very different by postcode so possibly more likely to pick up business only in areas where there is a higher theft frequency. Is the location of the network of dealers biased towards high theft areas?
- Claim size and variance of size increases over the three year period of the policy.
- Depreciation of the vehicle value is also based on mileage. The more mileage driven, the lower the market value and hence lower settlement from road risk insurer.
- Mitigate by having more sophisticated rating structure with rating factors similar to those used in road risk insurance...
- ... and have the manufacturer pay the theoretical premiums.
- Monitor frequencies and severities and adjust future premiums as necessary.
- Potential accumulation of risk with existing motor portfolio where the company insures both the road risk and gap insurance element when a significant event occurs (e.g. localised flood involving write off of many flooded vehicles).
- Mitigate by aiming for more diverse portfolio in terms of geographical location of road risk and gap insureds.
- Potential for moral hazard if insured is less likely to look after vehicle knowing that he/she is covered for the full amount of the purchase price for the first three years of the vehicle ownership.
- Potential for fraud if insured decides to write off vehicle.
- Risk of not receiving the whole annual premium during the first year of the policy if total loss occurs and policyholder cancels the policy after settlement, or car is resold.
- Mitigate by collecting premium up front or over fewer months rather than spread over 12 months.
- Level of new car sales and economic conditions influencing these?

- The volume of business could be much higher or lower than expected.
- Too little business might not cover the expenses incurred in writing a new line of business.
- So part of the agreement might be early cessation of the contract if volumes do not exceed a certain amount to cut losses early.
- Higher could entail more risk than desired.
- Mitigate by imposing a pre-determined limit in the contract with the motor manufacturer.
- Economic conditions impacting on market values of vehicles and therefore severity of claims for gap insurance are leveraged. For example, a 5% increase in depreciation value has a greater than 5% increase in claim severity.
- Impacts on business plan of a downturn in volumes of business and implications on expenses versus premium income to meet these?
- Potential failure of vehicle manufacturer and impacts on market values resulting from this.
- Mitigate by modelling potential scenarios within Business Plan allowing for variation in volumes of business written.
- In the event of a total loss, the insured has no incentive to dispute the amount paid by his private car insurer as will receive same amount in total whatever amount paid: could mean higher than expected payout from gap insurance.
- Could mitigate by clause in contract enabling gap insurer to negotiate amounts payable by communication and agreement with private car insurer.
- Could be moral hazard from underinsurance on car policy (even not comprehensive).
- Mitigate by clause in gap policy stating that car insurance policy should be comprehensive and car fully insured.

The best answers to this question were those that focused on the particular risks of gap insurance. Many candidates did not appreciate the geared impact on claim severity of higher than expected depreciation and therefore did not give enough attention to risk factors impacting market value of the vehicles.

(iii)

- Claims and exposure data are required for both the frequency and severity elements.
- No historic data exist for this scheme as it is new.
- Internal motor data could be used to determine possible claims experience on this scheme.
- Total loss claims frequency for each of the first three years of ownership of a vehicle could be derived from the company's motor experience if there is a reasonable history.
- This should be split down between theft, total fire/damage and flood if data allows and is credible.
- Use existing policy data to determine frequencies by rating cell (e.g. by age/gender of customer, location, security features).

- Consider trends in write off experience e.g. as a result of anti-speeding initiatives or increased security.
- Claims severity data: need to separate out property damage part of claims.
- Claims severity data: allow for excesses on motor policy.
- Severity will be modelled using purchase price and the market value of each type of vehicle.
- Purchase prices could be obtained from the manufacturer for each vehicle type.
- This data will need to be projected forward according to purchase price inflation expected in future.
- Market value by vehicle type likely to be available from Claims department who will have information on expected settlement costs for total losses.
- Alternatively, industry data may be available (e.g. GLASS) providing information on trade-in prices of second hand vehicles in the motor market as these will be similar to the payout on total loss claims by the road risk insurer.
- Residual value decay information can also be obtained from published information on the subject.
- Inflation assumptions required for claims settlement costs of total losses. Look at existing data to determine any trends with vehicle price inflation.
- Check to see if there have been any historic changes in motor claims handling procedures.
- Obtain expected sales by vehicle from the manufacturer...
- ...and likely customer profiles.
- Claims handling costs may also be included in the risk premium.
- Allowance should be made for reduced exposure due to resale of cars within three years, if cover ceases on resale.
- Allowance may also be made for the probability that not all premiums are received (e.g. if a total loss occurs or car is resold or policyholder dies and the premium payments stop). Or other monthly payment adjustments.
- Information on resale volumes should be available from company's own or industry data e.g. from DVLA.

Some candidates discussed data required for calculating the office premium (e.g. fixed expenses, loading for profit) which gained no credit as this question was specifically on the risk premium. A number of candidates listed a lot of detailed data items, e.g. those used for a standard motor insurance policy, that would not realistically be used in this situation. The stronger candidates were more commercial in their answers, and more realistic about data that would be publicly available. The weaker candidates talked about using the data from other insurers, which showed a lack of commerciality.

- (iv) Other data when considering whether to underwrite:
- Likely changes in economic factors that may influence car sales (e.g. price inflation, wage inflation, unemployment levels).
 - How long has the motor manufacturer been trading?
 - Existing relationship with manufacturer.
 - Opportunity for cross-sell.

- Market potential for this kind of business.
- Insurer's strategy.
- Market share of manufacturer and credibility in the motor market.
- Projected future sales by dealer.
- Geographical spread of sales across the UK.
- Policy wording and cover conditions to be used.
- Expected conversion rate of business (policy to car sale ratio)/demand for insurance product.
- Commission rate payable to motor manufacturer.
- Expenses of running the scheme split between acquisition, administrative and claims handling costs.
- Investment return expected on premiums in order to discount.
- Profit share arrangements.
- Competitors rates on similar products if available.
- Any regulations or legislation that may impact on the selling methods for this type of cover.
- Can the IT systems cope with this product build?
- Desired return on capital/profit requirements from the scheme.

*This was a fairly easy question and candidates generally scored well. The best candidates were able to state the other ingredients in the office premium **and** talk about some of the other commercial considerations.*

END OF EXAMINERS' REPORT