

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2016

Subject ST7 – General Insurance: Reserving and Capital Modelling Specialist Technical

Introduction

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

F Layton
Chair of the Board of Examiners
July 2016

A. General comments on the *aims of this subject and how it is marked*

1. The aim of this General Insurance Reserving and Capital Modelling Specialist Technical subject is to instil in successful candidates the ability to apply, in simple reserving and capital modelling situations, the mathematical and economic techniques and the principles of actuarial planning and control needed for the operation on sound financial lines of general insurers.
2. Candidates who are well prepared generally appear to perform reasonably on ST7, although a number of candidates do not appear to be adequately prepared or, show poor exam technique. The following points are always worth considering to improve performance:
 - 2.1. Lists are hugely valuable for breadth of point generation but candidates should always exercise judgement when applying them, in many instances questions will be specifically designed to render a number of the standard points inappropriate and marks (often generous multiple marks) will be available for identifying and articulating these nuances well.
 - 2.2. Calculation questions will come up on a regular basis within ST7, as candidates can clearly observe from examination of historical papers. Candidates should always be prepared for such staples as balance sheet preparation, triangle manipulations & projections and reinsurance layer calculations (along with being able to carry out any necessary adjustments including inflation, exposure, earning distortion and time period issues).
 - 2.3. Capital questions should be expected on every paper and represent a sufficient proportion of the course content that candidates should not expect to be able to pass on their reserving knowledge alone. Those who do not encounter capital work in their professional lives should be particularly careful to ensure that they take time to familiarise themselves with this element of the course.
 - 2.4. Candidates should aim to be able to give near exact glossary definitions as incoherent or vague descriptions will be marked harshly. If candidates struggle to remember definitions verbatim they should take the time to properly analyse the glossary definition to ensure they have fully absorbed all the nuances of the definition.
 - 2.5. It is important to always read the question properly.
 - 2.6. Always assume that question content is there for a reason. If something is pure bookwork, it should be obvious as such as it will generally go straight to a question with little or no specific context. These are the only sorts of questions where you should expect to provide generic answers. Otherwise you will need to make reference to the situation posed in the question to score well, i.e. if lines of business, types of insurance entity, a specific set of regulatory requirements or anything else is mentioned they have been chosen as they have an impact on the answer. If numbers are mentioned, they are there because we expect you to look

at them, think about them and offer some comment or display some ability to notice unusual features of a table of numbers (a key skill for an actuary). Every exam there will be a significant number of candidates who are clearly extremely well prepared, who write very long answers that clearly display all the base knowledge one might require to be able to think intelligently about a question, but because the answer is purely generic with no obvious attempt to actually think they score poorly.

B. General comments on *student performance in this diet of the examination*

Question 7 was the worst answered part of the paper. Many candidates missed the crucial point that the Poisson distribution assumed claim occurrences are independent which resulted in low marks. Most candidates didn't think widely enough throughout the question despite plenty of marks being available.

Answers to question 8 were disappointing, with the question leading candidates through some basic reserving calculations with the ultimate aim of commenting on observations. The early parts defining an LPT and its advantages were relatively well answered however the numerical parts of the question were generally poor. Some candidates simply did not seem to know how a BF estimate was derived which is poor at this level. Shortcomings really came to light from the final part with many candidates being unable to make any attempt (particularly with the question on AvE). Marks were picked up from simply stating assumptions which inflated scores and masked some poor attempts. The final part was answered badly even where candidates did answer the numerical parts correctly but did not comment on the output of their calculations – basic skills for those involved in reserving.

Other numerical questions were also poorly answered, with a number of candidates in question 2 clearly demonstrating they didn't understand some basic capital calculations and generally poor attempts at the UPR calculations in question 4 again with candidates picking up marks for stating assumptions but not attempting the calculations.

C. Comparative Pass Rates for the past 3 years for this diet of examination

| <i>Year</i> | <i>%</i> |
|----------------|----------|
| April 2016 | 36 |
| September 2015 | 37 |
| April 2015 | 34 |
| September 2014 | 43 |
| April 2014 | 34 |
| September 2013 | 35 |

Reasons for any significant change in Pass Rates in current diet to those in the past:

Pass Rate in line with recent history

D. Pass Mark

The Pass Mark for this exam was 55%.

Solutions

Q1 Going Concern

Unearned premium can be calculated net of DAC
... by deducting acquisition expenses before proportioning the written premium.

Or calculated gross of DAC
... by proportioning the full written premium without any deduction for DAC
... with DAC as an offsetting asset on the balance sheet.

UPR held as a liability on the balance sheet

DAC would generally be earned in a similar proportion to the gross premium.

Break-up basis

No UPR is held on a break up basis
... as the unearned gross premium is returned to policyholder

Any DAC would therefore need to be written off
... as there are no future margins for them to be recoverable from.
... excluding any unrecoverable commission

Many students struggled with this question and didn't provide the necessary detail. The best answers considered both the treatment of DAC and UPR separately under both a "going concern" and "break-up" basis. Students that knew the bookwork well got high marks.

Q2 (i) (a) $£350m + £100m + £75m = £525m$

(b) $\sqrt{(350^2 + 100^2 + 75^2)} = £371.7m$ (1 d.p)

(ii) Use $\text{Corr} = 2\rho \text{Cov}(A,B)$
 $\sqrt{((350^2 + 100^2 + 75^2) + (2 * 0.25 * 100 * 350) + (2 * 0.5 * 75 * 350))}$
 $= £426.5m$ (1d.p)

Assumptions

Correlation matrix is appropriate in all parts of the distribution
No other risk types considered

This was well answered by students knowing the bookwork allowing them to gain some quick and easy marks, however most struggled particularly with part (ii). Some students just assumed the same answer for part (i) (a) and (b) demonstrating a lack of understanding.

- Q3**
- (i) Costs arising from the writing of insurance contracts
... credit for any additional depth, e.g. recognising internal / external costs, commission, PCs etc.
 - (ii) Brokers / Intermediaries
Coverholders / delegated underwriters
Retailers
Cedants
Fronting partners
Direct sales force
Tied agents
Aggregators
Telesales
Internet
 - (iii) **Brokers / intermediaries**

... to compensate the intermediary for the introduction to the business
... and any administrative or support services they might provide
... e.g. policy issuance, post claim support, collection and presentation of data to the insurance market, risk management support etc.

Coverholders / delegated underwriters

- ... to compensate the coverholder for their access to distribution
- ... e.g. brand, technology / website, affinity grouping, retailer relationships, marketing etc.
- ... or their product design / underwriting ability / policy wording / claims handling expertise / fraud prevention systems etc.
- ... or their administrative services
- ... e.g. policy issuance, call centre management, claims handling

Retailers

- ... to compensate any retailers for their ability to sell insurance products as add-ons to their normal business
- ... e.g. GAP, electronics extended warranty, furniture warranty etc.
- ... covers profit margin, staff incentives, training, administration / document issuance etc.

Cedants

- ... would normally receive ceding commission / over-rider / return commission on quota share business
- ... to cover the higher expenses of cedants who write business direct

Fronting partners

. . . . to compensate a fronting entity for the value of their local licenses
. . . . and the credit risk assumed by acting as a fronter
. . . may also be administrative costs but depending on nature of deal the main administration may be carried out by the receiving insurer

Direct sales force / Internet / Telesales

Internal costs directly related to acquisition
. . . sales staff, marketing, websites, policy issuance, product design etc.
. . . elements of these costs may also accompany acquisition through other channels.

Tied Agents

. . . commission received per policy sold and upon renewal
. . . usually calculated as a percentage of premium
. . . rates can be relatively high to reflect focus on tied insurer(s)
. . . insurer(s) responsible for any failures of agent

Aggregators

. . . to compensate the aggregator for their access to the business
. . . and any administrative or support services they might provide (e.g. email reminders)
. . . commission bases including pay per click, pay per quote and pay per policy
. . . paid for listings to appear towards the top of search results

Most Channels

Profit commissions
. . . to incentivise coverholders / brokers / cedants to produce profitable business and align interests with the insurer.
Overhead costs
Compliance / regulatory costs
Profit Margins

Parts (i) and (ii) were well answered with most students getting full marks.

Part (iii) was less well answered due to a lack of detail. The best students considered each channel individually, and commented on each. Some students simply stated that acquisition costs will cover commission, without describing what the commission is aimed to cover.

- Q4** (i) A binding authority is a method of placing business using a third party coverholder.

It is a contractual agreement setting out the scope of delegated authority.

It allows coverholders to enter into (or enact) contracts of insurance (and issue documents) on behalf of Lloyd's syndicates.

- (ii) **Advantages**

Allows business, particularly small risks, to be written that would be uneconomic for the syndicate to write directly.

Coverholder may have specialised knowledge of a particular area that the syndicate does not have.

. . . e.g. specialist risk management or claims handling

Policyholders may feel more comfortable dealing with a local agent so possibly increasing volumes written/improving risk selection.

Providing diversification

Binding authority can provide significant control for the syndicate by specifying types of risks to be written and rates.

Admin cost savings

Disadvantages

Commissions/brokerage may be high given services provided.

May be difficult to obtain granular data on the individual risks written e.g. for purposes of assessing accumulations.

May be delays in receiving data in the syndicate as it has to be received from coverholder.

Risk that coverholder may break binding authority and write unsuitable business / Loss of control over business written

Regulators may require that syndicates have tighter control of business than provided by the binding authority framework.

Can cause accounting and valuation complexities e.g. Solvency II contract boundaries.

Reputational risks

Credit risks

Conflicts / Potential for competing with self if not controlled

Aggregation management / accumulation risk depending on terms

(iii) **Assumptions**

Binding authorities, policies attaching to binders and non-binder policies are all annual.

Policies attaching to binders and non-binder policies incept evenly throughout the year.

Uniform policy periods

2014: £10.5m non-binder, £4.5m binders

2015: £9m non-binder, £9m binders

UPR for non-binder business at 31/12/2015

$$= £10.5m * 0\% + £9m * 50\% = £4.5m$$

UPR for binder business at 31/12/2015

By general reasoning

Binding authorities written 1/7 therefore policies under binder can be written to 1/7 of the subsequent year, therefore exposure remains up to 1/7 of year 3.

E.g. 2014 Underlying policies commence across 12 months between 1/7/14 & 30/06/15 so therefore at 31/12/15, 50% are fully earned.

Of the remaining 50%, these are between 50% (30/6 inceptions) and 100% (1/1 inceptions) earned therefore on average 75% earned. Therefore proportion unearned = $50\% * 25\% = 12.5\%$.

By symmetry, proportion earned on 2015 is 12.5% therefore unearned 87.5%.

Or calculation using 12 blocks of monthly policies each lasting 12 months

Deriving monthly earning pattern

$$2014: £4.5m * (0.5 + 1.5 + 2.5 + 3.5 + 4.5 + 5.5) / 144 = £4.5m * (1/8) \\ = £0.5625m$$

$$2015: £9m * (1 - (0.5 + 1.5 + 2.5 + 3.5 + 4.5 + 5.5)) / 144 = £9m * (7/8) \\ = £7.875m$$

Or geometric approach

Derivation of triangle for correct calculation of exposure under 2014 policies.

Derivation of triangle for correct calculation of exposure under 2015 policies.

So total UPR = £4.5m + £0.5625m + £7.875m = £12.9375m

For part (i), most students demonstrated that they knew what a binding authority was. Better students stated that it is a contractual agreement.

Part (ii) was generally answered ok. Most students appreciated the “lack of control” as a main disadvantage.

Part (iii) was generally poorly answered with some making no attempt at all despite a number of easy marks on offer. Many students gained some marks by stating the “standard” assumptions (e.g. written evenly through the year, annual policies etc.). Many students simply treated the binding authority business as all being written on 1 July without appreciating the added complexity the arrangement brings. In addition, many students only attempted to calculate the binding authority business ignoring the non-binding authority business and missing out on some easy marks.

- Q5** (i) Changes in claims handling . . .
... changing practices in how and when a claim is recorded will distort data.
... including different classification of accident / reporting / payment dates
... or change in reserving basis / strength of claim
Claims reviews / Non Active claims
- Errors in dates
Errors in amounts (paid or reserve)
Errors in codes / classes
Errors in currencies
- Inaccurate case estimates . . .
... if these are not updated over time as new information emerges or payments are made data will be distorted . . .
... or a change in strength of case reserves will distort development patterns
- Seasonality
Salvage and Subrogation
Fraudulent claims
Change in T&Cs or Mix of business
- Processing delays . . .
... backlogs or other changes in processing will distort development patterns.
- Demand surge impacting claims development patterns
Large claims / CATs
Latent claims
- Mis-recording return premiums as claims distorts claims data.

Changes in legislation impacting amounts and methods of payment
Regulation changes / Market Initiatives

Claims inflation . . .

. . . high levels of claims inflation or step changes will give differences in data over time.

Changes in limits

Definition of nil claims / Reopened claims

Different allocation to class structures over time

Currency / FX issues depending on recording basis

Allocation or classification of reinsurance premiums and claims

Reinsurance programme change if considering net

(ii) Fundamentally, incorrect data is likely to lead to inappropriate reserves.

Reserves can either be under or overstated as a result of data issues.

Both in aggregate and at segmental level

e.g. class of business, currency, territory, distribution channel etc

Impact on decision making giving examples

Market / Investor / Credit Rating Agency / Regulator Impact

If reserves are overstated:

Worsen apparent results leading to a loss of market confidence.

Reduce apparent solvency position leading to regulatory issues.

Reduce apparent solvency position leading to rating agency issues

Tie up assets that could be used for other projects.

Increase premiums unnecessarily leading to loss of market share.

Cause a profitable segment to be closed.

May impact assessment of RI performance (either direction)

May cause unnecessary RI purchases

May affect planning for claims handling / loss adjustment expenses

Reduce staff morale/bonuses

If reserves are understated:

Profits may be prematurely distributed . . .

. . . leading to future issues in meeting liabilities.

Future, late reserve deteriorations will cause problems with the market/regulators.

Underpurchase of reinsurance

Too much tax is paid in the short term.
Improved rating from credit agencies (later reversed)
Premiums may be understated
with imminent profit issues
Inappropriate investment in particular lines of business

This was the best answered question on the paper.

Part (i) was well answered in general with students producing a wide range of points.

For part (ii), the best students considered both the possible impacts of over and under reserving separately. This allowed them to generate a wider range of points. Few students went into enough detail on where the under or over reserving may be, e.g. a particular class. Most appreciated that incorrect reserves may result in inappropriate business decisions being made.

- Q6** (i) The product is very expensive (total premium 108% of purchase price) . . .
. . . therefore poor value to customer and negligible risk transfer . . .
. . . particularly as the total cost of the product is not made clear up front.

Commission rates are very high at 60% of premium . . .
. . . the commission structure may encourage mis-selling with relatively large amount going to the salesperson.

Lack of any documentation prior to purchase is not acceptable . . .
. . . verbal explanations difficult to verify later and again could lead to mis-selling.
. . . no specific mention of key features such as cooling off period or type of cover

Point of sale selling within a store may not give chance for customer to make an informed decision.

Cancellation after claim unfair

The claims requirement to notify within seven days in writing is too strict/unfair
. . . for example if tablet is damaged whilst abroad.

Is it already covered on home or other insurance?
No prior indication of what constitutes "damage"
No mention of terms/conditions/exclusions
No mention of cooling-off possibilities
Question does not indicate any insurance sales training
No mention of insurance premium tax or equivalent
No mention of insurance carrier

- (ii) (a) Regulator could ultimately suspend sales of the product.
... or stop the company writing any new business by suspending licence.
... or stop point of sale selling of product
- Require that customers that took out the product are compensated.
- Impose fines and penalties on the company and/or senior management.
- Demand changes in governance/appoint directors to the Board.
- Produce comprehensive but clear documentation at point of sale
... including overall cost and commission
- Introduce formal, certified training for all those selling product.
- Require changes to the design of the product / T&Cs
- Reduce premium.
 - Change/reduce commission structure.
 - Allow longer time to notify claims.
 - Allow claims to be made by phone/e-mail.
 - Cooling off period
 - Provide (proportion of) premium back if no claims made)
 - Other sensible suggestions
- (b) Specify certain amount/quality of information that must be provided before sale.
- Run educational campaigns to inform policyholders
- Introduce minimum solvency requirements for insurers.
- Set up centralised fund to protect policyholders in event of insurer collapse.
- Limit premium rates that can be charged.
- Only license/authorise insurers that meet minimum standards.
- Only license/authorise products that meet certain standards
- Restrictions with regard to anti-competitive behaviour.
- Requirement for insurers to offer cover (e.g. high risk flood areas).
- Regulations with respect to treating customers fairly.
- Provide all insurance through Govt agency

Govt certification/register of approved salespeople

Appoint independent ombudsman

Other policyholder protections not relating to conduct

This was another well answered question on the paper. For part (i), most students were able to pick out the details from the question and state reasons why it may cause concern focussing on conduct related issues.

For part (ii), most students covered the main actions a regulator could take, and suggested improvements to the sales process/policy conditions. In part (b), students demonstrated knowledge of wider market features a regulator can influence such as setting up compensation schemes and imposing solvency requirements.

Q7 (i) Single parameter distribution

Mean equals variance

Effectively assumes independence between emergence of claims
... so is not suitable where there may be correlations between claims

Discrete distribution

Non-negative values

Infinite upper bound

(ii) Risks relating to business yet to be written / earned.

Normal statistical variance in outcomes / process error

... Large claim frequency
... Large claim severity
... Frequency of smaller claims
... Catastrophe or other accumulation outcomes

More systemic variance in outcomes / parameter error

... error in starting loss ratio assumptions
... e.g. mispricing risk
... anti-selection risks
... misjudgement of claims environment
... court awards
.....inflation
..... legislation
... poor coverholder / underwriter management (may be more operational risk)

. . . poor aggregation management of CAT exposures
.....mix of business misguessed

Correlation between classes
Correlation between attritional / Large / Cat
Expenses and Profit
Underwriting Cycle
Economy
New Latent Claims
Reinsurance considerations (not credit risk)

- (iii) Poisson only works if claim emergence is independent.

If there are correlations then the use of a Poisson could understate the volatility of large loss frequency.

All classes

Underwriting risk includes a number of systemic exposures that apply to all classes.

Pricing risk / parameter error / anti-selection / propensity to claim / coverholder management / inflation etc.

If large loss thresholds are fixed, then any inflation shocks could have a geared effect

. . . as they would push more claims over the threshold.
. . . may be offset by a revised severity distribution more weighted towards the lower end of the threshold
. . . but considering this parameter in isolation it would still be potentially flawed

Employers' Liability

Significant exposure to shared inflationary factors

. . . court awards
. . . legislation
. . . propensity to claim
. . . macroeconomic conditions impact propensity to claim
. . . claims farming may exacerbate propensity to claim issues.

May be specific correlations depending on the portfolio composition as well
. . . . any particular large employers might have multiple large claims
. . . potential shared drivers across companies (and even industries) if individual materials / chemicals / working practices prove problematic
. . . underwriting risk only so less scope for aggregation over time with latent type exposures but could still get aggregation issues across insureds.

Professional Indemnity

Significant exposure to shared claims environment factors
... macroeconomic conditions impact propensity to claim
... as well as severity of resulting loss
... e.g. surveyor / solicitor claims for poor conveyancing (or other sensible example).

Claims made cover so additional risk that increased propensity to claim
e.g. from publicity about recurring bad practice could crystallise a significant number of notifications into a single underwriting year.

Again some potential for large companies to have systemic claims potential.

Property Risk XoL

Relatively limited class specific drivers.

Risk XoL only – no CAT which is main aggregation concern for Property.

Excess so any macroeconomic factors likely to have lower impact,
... e.g. increasing theft from an economic downturn wouldn't tend to get to an excess layer programme.

Some inflationary potential
... e.g. if there is a material change to repair costs or material costs.
... but this is less critical for this class
... Subsidence / Winter Freeze impact
... although as an excess line there are always inflationary gearing issues to consider.

Terrorism

Significant exposure to shared political environment factors
... increase in global tension could drive a general increase in claims frequency
... specific terrorist organisation could implement a series of attacks.
... Geographical clusters / storm events

This was the worst answered question on the paper by some way.

For part (i), most students knew a couple of keys features, however in general more detail was needed for 3 marks.

In part (ii), most students covered the main sources of volatility, however more points were needed in general. Some students described how to model claim costs which wasn't asked in the question.

Part (iii) was poorly answered. For 12 marks, a lot of detail was required. Many students missed the crucial point that the Poisson distribution assumed claim occurrences are independent. Missing this point resulted in low marks. The best answers considered each class of business separately and described ways in which claims are not independent. In general, students needed to be a bit clearer on whether the Poisson distribution was appropriate in each case.

Q8 (i) An arrangement whereby the total liabilities in respect of a specified book of business is passed in its entirety from one insurance entity to another.

Policyholders will be informed of this Novation and the deal may need to be approved by a court.

A form of financial reinsurance

Notation is not strictly reinsurance since the new insurer is responsible for the liabilities in total from the date of transfer.

The original insurer will transfer the reserves and the remaining exposure to the new insurer.

It is likely that there will be a premium in addition to the existing reserves. This would normally include a claims handling service.

All adverse claims risks and the investment income will be passed to the new insurer.

(ii) **Advantages**

- They can improve the credit rating of the original insurer.
- A way to exit the business for the original insurer / concentrate on remaining business
- The new insurer will gain diversification if not already in this area and achieve a larger client database.
- Complete transfer of liabilities (both may gain)
- Complete transfer of portfolio risks (mostly gain to former insurer)
- There are specialist players in the market that can possibly run-off such portfolios more profitably than the original insurer.
- Can achieve relatively quick outcome (both may gain)

- Free up capital
- Help in M&A situation
- Could release speciality claims handling resource
- Access to history
- May be a good deal for one or the other party

Disadvantages

- Assets may need to be realised to pass across the value of the reserves to the accepting insurer,
- ..which is particularly important if there is mismatching or if tax gains/losses would be crystallised.
- If the new insurer defaults, this could damage the reputation of the original insurer.
- Need for court approval may cost in terms of time, resource & certainty
- Uncertainty over approval
- The transfer may require the buy-in of reinsurers where there are existing reinsurance arrangements covering the portfolio.
- There will be an associated cost to the original insurer of the risk transfer, which will depend on the current risk appetite of the market.

... This cost would be any premium payable plus the “lost” investment income.

- (iii) Assuming that the Bornhuetter-Ferguson method has been based on the Initial expected losses and Chain Ladder ultimates given in the table.

Development pattern applicable to all years

$$BF_y = CL_y \times \% Dev_y + IE_y \times (1 - \% Dev_y)$$

$$\% Dev_y = \frac{BF_y - IE_y}{CL_y - IE_y}$$

where:

BF_y = Bornhuetter-Ferguson ultimate loss estimate for origin year y

CL_y = Chain ladder ultimate loss estimate for origin year y

IE_y = Independent initial expected loss ultimate for origin year y

$\% Dev_y$ = estimate of the proportion of ultimate claims that are currently incurred for origin year y

- (iv) $IBNR_y = BF_y - CL_y \times \% Dev_y$
Where $IBNR_y$ = Selected IBNR for year y

| | <i>% developed</i> | <i>CL × % Dev</i> | <i>IBNR</i> |
|------|--------------------|-------------------|-------------|
| 2008 | 101.90% | 68 | –1 |
| 2009 | 94.61% | 103 | 5 |
| 2010 | 88.89% | 33 | 4 |
| 2011 | 71.59% | 78 | 41 |
| 2012 | 53.45% | 53 | 51 |
| 2013 | 27.37% | 25 | 74 |
| 2014 | 5.39% | 3 | 73 |

- (v) Assuming the incurred development patterns have not changed due to the additional years claim activity.

Assuming the incurred claims development pattern is stable across origin years.

Assuming no change to the initial expected ultimate loss estimate.

Assuming 2008 has fully run-off

| | <i>% developed</i> | <i>Incurred Closing</i> | <i>Revised Ultimate</i> | <i>IBNR</i> |
|------|--------------------|-------------------------|-------------------------|-------------|
| 2008 | 100.00% | 72 | 72 | 0 |
| 2009 | 101.90% | 97 | 95 | –2 |
| 2010 | 94.61% | 37 | 39 | 2 |
| 2011 | 88.89% | 94 | 110 | 16 |
| 2012 | 71.59% | 70 | 101 | 31 |
| 2013 | 53.45% | 47 | 94 | 47 |
| 2014 | 27.37% | 14 | 69 | 56 |

- (vi) Assuming error in question (intended to be 2015 not 2014)

Assuming the incurred claims development pattern is stable across origin years.

Assuming that the remaining IBNR for 2008 will be incurred during 2015

Approach A – apply incremental factors to BF figures.

| | <i>Incremental Pattern t to $t + 1$</i> | <i>Expected Incurred t to $t + 1$</i> | <i>Actual – Expected</i> |
|------|---|---|--------------------------|
| 2008 | –1.9% | –1 | 5 |
| 2009 | 7.3% | 8 | –14 |
| 2010 | 5.7% | 2 | 2 |
| 2011 | 17.3% | 21 | –5 |
| 2012 | 18.1% | 19 | –2 |
| 2013 | 26.1% | 26 | –4 |
| 2014 | 22.0% | 17 | –5 |

Approach B – apply incremental factors to original plan (some credit was given for this approach even though the question asks for expectations implied by the reserving process i.e. BF).

| | <i>Incremental Pattern t to $t + 1$</i> | <i>Expected Incurred t to $t + 1$</i> | <i>Actual – Expected</i> |
|------|---|---|--------------------------|
| 2008 | –1.9% | –1 | 5 |
| 2009 | 7.3% | 7 | –13 |
| 2010 | 5.7% | 2 | 2 |
| 2011 | 17.3% | 25 | –9 |
| 2012 | 18.1% | 20 | –3 |
| 2013 | 26.1% | 26 | –4 |
| 2014 | 22.0% | 17 | –6 |

- (vii) (a) The initial expected losses seem to have been understated in years 2008 – 2010 when compared to the almost fully developed chain ladder estimates.

Only have one year of information / movements so caution on drawing conclusions

May wish to check benchmarks or obtain an independent view

This trend may have reserved from 2011 onwards though it is difficult to know for sure for the latest years which are relatively undeveloped.

The experience in 2009 is significantly better than expected possibly due to a conservative reserve estimate or perhaps due to an unexpected reduction in the incurred claims movements for that year.

The incurred development patterns exceed 100% for 2008 indicating that they expect some case redundancies for this year perhaps due to subrogation or conservative case reserving.

It does not make sense to use a Bornhuetter-Ferguson method where the incurred development exceeds 100% and the chain ladder estimate may be more reliable for these years.

The revised Bornhuetter-Ferguson estimate shows a reduction in the ultimate over the year which is encouraging.

. . . though this in itself does not mean the reserves are conservative as the analysis was required with some high level assumptions
. . . so the favourable result could be due to estimation error.

The actual versus expected analysis is also showing favourable movements particularly for the more recent years.

. . . this could be due to overly conservative reserve selection assumptions

. . . but could also indicate incurred claims are lower than expected due to claim processing backlogs.

- (b) Claim development triangles split, subject to credibility considerations, by some of
- ...paid/incurred
 - ...amounts/counts
 - ...currency
 - ...primary/excess
 - ...location of claim or US/Non US
 - ...indemnity/fees
 - ...Type of claims e.g. E&O, D&O
 - ...Type of profession e.g. accountant, lawyers etc.
 - ...distribution channel
 - ...Open/closed claims

Details of historic and current individual large losses.

Premium and exposure data by underwriting year e.g.

...written /on-level premium

...commission

...turnover or funds under management

...corresponding to the claims data where appropriate & practical

Historic rate change information.

Historical estimates

Reserving basis (best estimate / prudent etc.)

Discounting

Uncertainties

Details of booked reserves if different to the figures provided.
Reason for seeking a loss portfolio transfer.

Details of any reinsurance arrangements attaching to the business

Information relating to what may happen to this reinsurance after novation.

Details of any changes to cover e.g. changes in deductibles, limits, terms & conditions.

Review of case files

Source of IELR / other assumptions

Internal / external reserving reports

Details of any changes to target market or distribution channels.

Responses to the final question were generally disappointing given the basic skills being tested and the number of marks available for some basic calculations and observations.

For part (i), most students knew the basic feature of LPT in that liabilities are transferred. However, the answers lacked the detail needed for 3 marks. Few mentioned court approval and informing policyholders. Some students stated it is only used for business that is in run-off which isn't the case.

Most students made a good attempt at part (ii), getting the main points. Few mentioned the uncertainty of approval, realising assets and reinsurers buying into the transfer.

For part (iii), most students managed to derive an appropriate formula (although some simply did not seem to know how a BF estimate was derived which was very disappointing). Few students managed to get full marks on the assumptions made.

Parts (iv) and (vi) were mixed. Most students gained some marks from stating assumptions although a number made no attempt at all in the calculations which was surprising.

Most completing part (iv) were able to have a go at (v).

Part (vi) in particular was very poorly answered with some students seeming to have no idea how to calculate expecteds. Although the question stated the incorrect year, this didn't have a material impact on the overall result and the Examiners were generous where candidates made sensible comments/assumptions.

Part (vii) (a) was also poorly answered. Very few students mentioned any of the figures they had previously derived. Even if they hadn't managed to complete the calculations, reference could have been made to the figures from the question (e.g. Planned LRs, BF ultimates etc.).

Part (vii) (b) was better answered given the range of points available. Some students missed extra details specific to the class of business (professional indemnity) like professions insured, location, turnover, type of claims.

END OF EXAMINERS' REPORT