EXAMINATIONS

April 2001

Subject 403— UK Fellowship General Insurance

Paper One

EXAMINERS' REPORT

There was considerable scope to achieve high marks on this paper by knowing the bookwork with a little demonstration of application of that knowledge. However most candidates were unable to demonstrate to the examiners that they had the skills (particularly with regard to questions 7 and 9) to apply their knowledge in new situations. There did not appear to be a time problem with this paper. The solutions given indicate one way of answering the questions set although credit was given by the examiners where alternative valid solutions were presented.

1 *Although most candidates could define reciprocity, not many were able to demonstrate the wide ranging effects that such an arrangement had on the parties involved.*

Reciprocity is an arrangement between two insurers who agree to reinsure risks with each other.

Increases net premiums by accepting reinsurance, if the alternative is not to accept reinsurance, but still to cede business
Increases gross premiums and hence market share
Also improve market standards / reputation
Obtain a more diversified portfolio
Increase stability of results
Changes expense ratio
The effect on commission will depend upon what commission arrangements are entered into
Increase financial strength by effectively merging resources
May reduce the SMSM of one or both companies depending upon the current situation
If the companies operate in the same field then may not get a better spread of business and the catastrophe position may not be improved.
Business ceded may be more profitable than business received.
Exchange of business may result in disclosure of market knowledge
May need to spend much time and expense underwriting reinsurance received.
Demands on management time, especially if several agreements in place
New types of management problems e.g. dealing with business in other currencies
Will need to consider the security of the reinsurer and the standard of their underwriting criteria

2 *Many candidates demonstrated their knowledge of the BF method with formula – marks were given for this providing a clear description of the formula was given. This lead to most candidates receiving more than half marks on this question.*

The Bornheutter-Ferguson method is based on the premise of splitting the overall loss for each accident (or underwriting) year into past and future portions, as follows:

The past is already well known (paid claims) or estimated (incurred claims).

The future is not well known and the claims patterns of the given year may not provide the best estimate.

It may be better to use a more general estimator, based on the overall loss ratio for the class of business and an estimate of the year still outstanding.

Adding the two parts together provides an estimate for the overall losses.

This method can be used when the projected results from other methods, especially the chain-ladder method cannot be relied on with confidence, for example when claims variability is large or the class is long tail and there is little claims development to date.

Use when other methods are unreliable

3 *Most candidates demonstrated that they knew the main perils and risk factors associated with this class of business.*

Perils storm, fire, explosion, collision, pollution
size, type, age and condition of the vessel, quality of crew, nature of the cargo, and countries visited.

4 *Almost all candidates scored very high on this question, although most failed to mention business written prior to 1998 would have an effect on the earned premium by assuming that no such business was written without stating that fact.*

Underwriting Year / Calendar Year	1998	1999	2000	Plan 2001	Total
1998	0	0	0	0	
1999	6.25	0	0	0	
2000	12.5	12.5	0	0	
2001	12.5	25	12.5	0	50.0

Assumptions: No Premium earned in first year, any other is wrong
Premium earned evenly (or some reasonable assumption) over next 4 years
Answer is 50.0 (or whatever is consistent with earnings assumptions)
Business is written evenly over the year.
No business written prior to 1998 (or if so then answer will be different)

5 *Most candidates achieved high marks in this question by demonstrating their knowledge of Guidance Notes although some quoted non-existing numbers whilst others quoted numbers associated with other business areas.*

PCS General guidance on Professional Conducts Standard

GN12 applies to all formal actuarial reports and applies in each case.

The Appropriate Actuary of a Friendly Society that writes general insurance is required to produce a certificate at least once every 3 years confirming the appropriateness of the technical provisions of the Society. GN32 applies.

Under the Lloyd's Valuation of Liabilities rules, syndicates writing general insurance business are required to provide to the Council of Lloyd's each year, for solvency purposes, a statement of actuarial opinion on their worldwide reserves both gross and net of reinsurance. GN20 applies.

Lloyd's Syndicates authorised by the International Insurers Division (IID) of the National Association of Insurance Commissioners to write Surplus Lines insurance in the United States of America are required to provide a Statement of Actuarial Opinion (SAO) on their worldwide reserves net of reinsurance each year and an SAO on their reserves gross of reinsurance in their Surplus Lines Trust Fund. GN33 applies.

The New York Insurance Department requires an SAO on the reserves gross of reinsurance in the Surplus Lines Trust Fund and on the reserves gross of reinsurance in the Credit for Reinsurance Trust Fund. GN33 applies.

UK insurance companies authorised to write excess and surplus lines non-life business in the United States of America are required by the IID to supply an SAO certifying the adequacy of their reserves each year. GN18 applies.

6 *Although this question was a general question on the need for reinsurance many candidates failed to score more than half marks.*

Details of existing reinsurance arrangements
Appropriateness of existing reinsurance arrangements
Past claims experience — say 5 to 10 years depending on company and reinsurance coverage
Effect on profitability of higher retention levels
Goodness of fit of statistical distributions to past claims experience
Size of company
Classes of business written
Solvency margin / free assets
Size of risks
Volatility of claims experience
Geographical spread of business
Accumulations of risk
Alternatives to reinsurance
Availability of reinsurance
Cost of reinsurance, value for money
Reinsurance security
Directors appetite for risk
Catastrophe risk
Need for technical help
Effect on SMSM
Need to stabilise results
Need for financial support
Possible reduction in admin costs if less contact with reinsurers
Change in volume of business
Reinsurance premiums relative to gross premium
Investment freedom

7 *This question aimed to make the candidates think about the risk of insolvency in a particular situation by drawing upon their general knowledge of insolvency issues. Only the better candidates could develop enough points to obtain anywhere near half marks.*

In terms of Investment Risk
Will need to assess the current investment strategy in light of the new class of business being introduced. Will need to ensure that it is adjusted in terms of nature, term and the estimated future level of free reserves
May need to ensure a greater degree of matching / liquidity to protect against uncertain nature of claims.
Avoid unnecessarily volatile assets or concentrations which may previously have existed.

In terms of Underwriting / Reinsurance Risk
Actuarial investigations into new business rates and persistency, etc. will be required to ensure that appropriate loadings for ongoing expenses are made in calculating the office premiums
Allowance for set up costs should be considered in the pricing mechanism so that a drain on the solvency margin is not experienced
Will need to review the reinsurance requirements in order to ensure that the new business is adequately covered, without prejudicing the existing business.
This may include Quota Share arrangement with a low proportion retained in order to maximise the spread of risks in the early stages
Alternatively may use individual excess of loss working layer
Also likely to use individual excess of loss (if working layer not used) to protect against large individual losses
Aggregate excess of loss to protect against the effects of accumulations of risk
Catastrophe excess of loss cover to cover against the effects of perils such as storms
May get Stop Loss cover to protect both books of business
Consider reciprocity arrangements
Solvency of reinsurers should be assessed

Will need to get hold of data for the motor business via industry stats or technical assistance from reinsurers in order to devise a premium rating structure.
Will need to ensure that appropriate IT systems are in place to process policies, claims and record the necessary associated data.
Relevant expert professionals will be required in order to ensure that policy wordings are carefully prepared.
Will need to make sure that underwriting guidelines are adhered to.
Will require management information to ensure that volumes of business and spread of risks are suitably controlled and prove to be profitable
Will need to consider at what stage of the Insurance Cylce will the product be launched

Market / Competition Risks
Carry out some market research to guage level of demand for the new product.
Consider advertising / brand awareness to promote product
Will need to test premium rates against competitors to avoid adverse selection.

By moving into the new area this may encourage other insurers to do likewise with household insurance and thereby increasing the competitive pressure in that area.

8 *This type of question has appeared before in exams and the first four parts were answered very well by most candidates. However, only the better candidates scored heavily on the last part.*

(i) minimum level of excess assets over liabilities

Premium Basis
Gross written premium last year
18% 1st 10m ECU
16% thereafter
Health Insurance 1/3rd of the above

Claims Basis
Gross 3 year average claims incurred
26% 1st 7m ECU
23% thereafter
Health Insurance 1/3rd of the above
Storm, hail and frost averaged over 7 years
Ignored if not trading for full averaging period

SMR is higher of the 2 calcs.
multiplied by net to gross (of reinsurance) claims incurred over last year
minimum ratio 50%

Minimum value of ECU is GBP 0.4166

Guarantee Fund is 1/3 of SMR
Minimum 400,000 ECU
provides minimum value of SMR

(ii) Implicit discounting forbidden
Explicit discounting is allowed, subject to:
- expected average discount period exceeds 4 years
- discounting on a recognised prudential basis
- total cost of settling claims will take account of all relevant factors
- rate of claim settlement adequately modelled
- interest rate not exceed prudent rate on appropriate assets:
- not exceed 5 year historic rate on these assets
- not exceed 1 year historic rate on these assets

Company must disclose in the accounts:
- pre discount reserve
- categories of claims discounted

- methods used in discounting

Can discount UPR reserves by rate expected to be earned until claims settled
Net of DAC

(iii) Requirements on calculation and admissibility of assets
Must spread assets over reasonable number of holdings
Mid-market value if exists
Loans discounted at market rate interest, <1 year face value
unlisted shares 3 year average earnings x FT-Actuaries P/E ratio for industrial
Land assessed by qualified valuer in last 3 years
No restriction on government bonds
Others restricted to % of general business amount
- liabilities plus max(20% written premium or 400,000 ECU)
No credit for outstanding premiums > 30% net premium income
Special rules for valuing dependent companies

(iv) Solvency margin time 1 is given by

solvency margin time 0
+ interest (less tax) on solvency margin time 0
+ gross insurance profit (including interest on tech. Reserves)
– tax on gross insurance profit
– dividends from net insurance profit

Define

$SM(n)$	solvency margin at time n
$R(n)$	gross profit in year n, including gross investment income on tech reserves
$P(n)$	premiums written in year n
I	gross rate of interest earned on all funds
t	tax rate
d	proportion of net insurance profit distributed as dividends

Then

$$SM(1) = SM(0) \times [1 + I(1 - t)] + R(1) \times (1 - t) \times (1 - d)$$

From the objectives

$SM(0) = 0.5\, p(0)$
$SM(1) = 0.5\, P(1)$
$P(1) = 1.25\, P(0)$

$$0.5 \times 1.25\, P(0) = 0.5\, P(0) \times [1 + 0.09 \times 0.67] + R(1) \times 0.67 \times (1 - 0.4)$$

i.e. $0.402\ R(1) = 0.09485\ P(0)$

i.e. $R(1) = 0.2359\ P(0)$
$0.1888P(1)$

i.e. gross insurance profit required is 18.8% of premium

(v) Mutual — can't raise capital
potential insolvency of reinsurers/brokers
market/regulators expect 2x at least
Fund acquisitions/ M&A activity
Free up investment policy
Launch new products/expand portfolio
to protect against claims variability
to protect against asset risk, expense risk and legislative changes
purchase less reinsurance as the cost of reinsurance is perceived to be greater than the return on capital needed

9 *This question tested the candidates ability at being able to apply their knowledge of the subject to a new situation. Very few candidates scored anywhere near half marks on this question and therefore did not demonstrate to the examiners that they could apply their knowledge in a way that showed their understanding of the subject.*

(i) Profitability: As companies will have to pay tax earlier, business may be less profitable
unless the companies are able to re-coup loss from policyholders by charging higher premium.
This will be especially true of longer tail classes where under current regime reserves can roll up with interest tax free.
Competitiveness: Unless other countries have similar regulations it may result in the industry being less competitive and international business (such as reinsurance and large risks) being placed in other countries.
Capitalisation: Unless the premiums are adjusted to reflect the value of tax paid then the capitalisation of industry will be reduced as more will be paid in tax.
If the discounted reserves are also to be used for accounting purposes then the apparent solvency of the industry will increase (as discounted reserves will be lower than the previously).
If the additional cost is not passed to the policyholders then companies may also reduce their real level of capitalisation (i.e. including any margins)
so that the expected return on capital is maintained at previous levels.

Company specific: For companies writing long tail business there will be a significant tax liability arising from a restatement of the reserves in respect of past business.
Premiums need to increase to compensate, and so competitive international position may be weakened.

For companies writing short tail business the effects noted above will apply but to a much reduced level.
For companies not taxed on underwriting result then no effect other than making them more competitive within their own country as no need to increase premium rates.

(ii) Additional administrative burden for companies and government.
Expected payment pattern may be difficult to derive for some classes.
To what extent should classes be combined (best estimate for sum of classes may not be equivalent to sum of best estimates).
Companies with significant amounts that are not invested (broker balances, reinsurance balances) would be under reserved if the balances are taken as an asset at face value
unless the discount rate can be adjusted
proposals not clear on currency effects
should local currency bond be used — what if not available?
As at what date should gross redemption yield be taken
Initial problem of authority for insurance reasons
No government bonds of suitable term and hence not possible to determine an appropriate redemption yield
If discounted reserves are used for accounting purposes and the bond yield is higher than the actual asset yield then there is the problem of reserves plus investment return not meeting liabilities
Problems of allowing for re-insurance recoveries
Subjective nature of what is "best estimate"

(iii) The proposals do not take into account the uncertainty around the best estimate that exists from the following:

quantum risk arising from judicial decisions / legislation / latent claims / reinsurance bad debt / economic effects on claims inflation
timing risk ⇒ realisation of assets in unfavourable condition
currency risk
expenses
unexpired period of cover
investment risk (changes in yield — reinvestment risk)

As the reserves will not contain an implicit margin then p/h less secure unless additional measures to increase level of capital required.
Policyholders will need to fund some of the additional tax liability as shareholders unlikely to take whole loss in return.
If international competitiveness is weakened then capitalisation levels may be reduced to compensate (i.e. s/h maintain return on capital) ⇒ less security for p/h.

If discounted reserves are also used for accounting then initial transfer from reserves to surplus — may encourage companies to release capital ⇒ industry less able to withstand shocks in future.