

# **Institute of Actuaries of India**

**October 2009 EXAMINATION**

**Subject ST1 — Health and Care Insurance  
Specialist Technical**

**MARKING SCHEDULE**

## **Solution 1**

### ***Premium rates***

Health insurance is generally a price-sensitive product; if the company's premium rates have been increased, this might make the company uncompetitive in the critical illness insurance market.

Premium rates of other companies have been reduced. This may be as a result of changes in morbidity experience or changes in the companies' profit criteria.

It is possible that margins in the premium basis for future claim volatility may have been high until recently, and companies are now shedding some of these margins as experience develops and future rates can be predicted more reliably.

One or more companies, who are able to offer more competitively-priced products may have entered the market, *eg* because they have lower expenses or because they are using less stringent profit criteria such as selling at lower profits (or even losses) to establish themselves in the market.

Also, new entrants or other competitors may have been "cherry picking", (*ie* using stricter underwriting in order to offer lower premium rates to healthy lives), leaving this company with rates that only look reasonable to the less healthy lives.

### ***Product characteristics***

Business may have been lost because the product design is out-dated (*eg* the list of conditions covered does not match those offered by competitors).

Other aspects of the environment (*eg* tax, legislation) may have changed resulting in the current structure of the product becoming less attractive to customers.

Some other aspect of the competition's products may have improved, (*eg* commission rates, options available to policyholders).

[Give similar credit for alternative relevant points]

### ***How the product is sold***

The underwriting criteria used by the company may have become more stringent. So it may be accepting a smaller proportion of applications on standard terms. When new underwriting criteria become apparent to intermediaries, they often send business elsewhere unless there are other reasons to stay put.

If the company sells through independent intermediaries, it may have fallen out of favour, *eg* commission rates out of line with those of other companies or poor administration resulting in delays in processing sales.

The company may sell exclusively or primarily through a distribution channel that has declined in importance over this period, *eg* using their own sales force rather than selling through IFAs.

The company may have experienced problems in distributing its products, (*eg* loss of an independent intermediary, problems with its own sales force).

[Give similar credit for alternative relevant points]

### ***How the company brand is promoted***

The brand may have been poorly promoted. This embraces all aspects of how the the company promises to those who are interested in buying a health insurance policy. The company may have received bad publicity – *eg* from adopting over-strict claims management procedures, or in relation to another product, or just generally.

The solvency of the company may have been under threat and reported in the media

The regulator may have asked the company to stop selling certain products which constituted a major proportion of new business

There may have been falls in health insurance sales generally, (*ie* a decline in the market as a whole rather than anything specific to this company). This may be a result of, for example, a decline in customer confidence in the insurance industry or bad publicity following mis-selling of products.

[Give similar credit for alternative relevant points]

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2 (i) CI product is required because of the risk of serious illnesses which may cause death or disability e.g. cancer, heart attack.

The treatment of these illnesses is normally expensive and may require hospitalization over long period of time.

During this period the patient is may not be able to continue with his occupation and accumulated savings may not be sufficient enough to pay for medical expenses and other normal living expenses for family, food etc.

CI product offers lump sum income on diagnosis of such illness.

The value add of the product is a “feeling of protection” that in case of unfortunate event happening, some financial support can be expected when its needed most.

2 (ii) *Ages 16 – 25*

*Situation:* may still be in higher education, first job, may or may not be married, probably does not own home or have dependants.

*Financial needs:* may still have some support from parents; may be saving towards future family needs, such as buying a home; paying off student debts

*Health needs:* likely to be in good health, so unlikely to be considering healthcare needs to a great extent; may have a need for cover against injuries (eg young, active people with minor sporting injuries/need for physiotherapy).

*Overall:* little need for individual health insurance products, although employers may offer some health benefits (eg IP, PMI) as part of a staff benefits package.

□ *Ages 25 – 35*

*Situation:* may be married and have children, large debts (eg if they have borrowed money to buy a home), moderate income and often high expenditure (cost of raising children) but often not much wealth.

*Financial needs:* loans to meet cost of buying home and/or other high expenditure; may start saving, possibly for children as they grow older; far-sighted individuals may perceive the need to start saving for retirement.

*Health needs:* while most may be in good health, many will have an increased awareness of possible ill-health in the future, possibly due to family history of illness; worries about what will happen to dependants should earner(s) become sick or die.

*Overall:* main needs are for IP and CI, to ensure liabilities (mortgage, protecting dependants) can be met in the case of ill-health.

□ *Ages 35 – 60*

*Situation:* children become older and ultimately independent; debts reduce, loans are paid off; income may increase and could well outstrip expenditure; periods of redundancy may also occur.

*Financial needs:* biggest financial need is to save for retirement; consideration of how best to manage the transfer of wealth to the next generation (on or before death); consideration of uses for all that other additional disposable income!

*Health needs:* while still in employment, may still be a need for protection in the event of being unable to work; critical illnesses may be a worry in this age band; may wish to provide for the cost of future long-term care (to protect against the consequences of long-term sickness or disability); greater need for more luxury and quicker healthcare.

*Overall:* possible needs for all health insurance products.

*Ages over 60*

*Situation:* move from employment into retirement.

*Financial needs:* few debts, but much lower income, should have more accumulated wealth; main risk is running out of money if become very old; still wish to save disposable income for leisure activities and for wealth transfer.

*Health needs:* an increasingly imminent need for long-term care.

*Overview:* main need is for LTCI, although may also still find PMI attractive; CI might be appealing if it can be found on acceptable terms.

2(iii) Other factors that may affect the need are :

- culture of the country – whether people are health conscious
- availability of health care
- awareness about health insurance
- maturity level of health insurance market
- confidence in insurance companies
- prevalence of major diseases like cancer, heart attack
- average income level in the country
- state support for health care
- affordability of health insurance premiums
- tax incentives on health insurance premiums

[15]

### 3 (i) **Types of reserve**

*Long-term insurance:*

- reserves for in-force policies
- claims reserves (including IBNR)
- option reserves
- for group contracts, UPR and URR

*Short-term insurance:*

- unearned premium reserve (UPR)
- unexpired risk reserve (URR)
- outstanding claims reserve
- incurred but not reported claims reserve (IBNR)

- incurred but not enough reported claims reserve (IBNER)
- equalisation and catastrophe reserve
- claims in transit reserve.

Investment mismatching reserves may also need to be held.

In almost all forms of long-term insurance, the benefit payable is known once a claim is filed. Short term insurance is essentially an indemnity cover - the amount payable on claim is determined by the costs incurred by the claimant and thus is not known for sure until the particular course of treatment is complete. Therefore potentially the claims reserves for short term insurance are subject to most uncertainty as compared to similar reserves for long term insurance. However reserve for in-force policies for long term insurance would be more uncertain as compared to UPR / URR for short term insurance due to uncertainty of risk incidence over longer term.

### 3 (ii)

- IBNR estimate is based on Guidance Notes and insurance regulations
- Reserves need to be prudent, so we should consider rounding up
- 99.78 crores is based on confidence level of 99.5%
- The assumptions used for the reserve estimation are based on long experience and these are fairly robust, so the IBNR estimation is close to exact calculation for the expected payout of claims incurred but not reported.
- It may not be possible to justify reduction of 0.78 crores to the regulator
- The estimate has been peer reviewed
- Rounding down is not a standard industry practice / not allowed by regulations
- The insufficient reserves could pose to be a serious reputation risk.
- If we round down then we should apply a prudence margin which would imply that actual reserve is in excess of Rs 100 crores
- Company's policy on rounding for accounts / reserves, allows for only rounding up.

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### 4 (i)

1. Critical illness benefits which are provided as an "additional" or a "stand-alone" benefit are intended to provide a "living" benefit to cover costs of surviving one of the listed critical illnesses. In case of mortality risk, incidence of death would lead to financial loss. However, the same could not be said about critical illness – in case an individual dies shortly after incidence of a critical illness, then there are no "costs of surviving the critical illness". Hence survival period needs to be insisted where critical illness benefits are intended to be living benefits (where crucial illness is offered as an additional benefit or a standalone benefit).
2. There might be certain "illnesses" in the list of CIs which by definition would require survival till certain period of time to qualify for a claim. For instance, a defined proxy for permanence in "total and permanent disability due to accident or sickness" and documented evidence of sequelae of certain neurological deficits in case of "major head trauma" or "benign brain tumour". In such cases survival periods are part of the eligibility conditions for claims. Irrespective of whether it's a stand-alone or an accelerated benefit survival periods for such benefits would be part of their definitions.
3. Claim adjudication: Specific criteria need to be satisfied to be qualified for a CI claim. Some of this could be a results of medical tests and an expert opinion from a specialist medical consultant. It might be difficult to all the necessary information to adjudicate a CI in those cases where a death

occurs immediately after the incidence of the CI. Survival periods will allow the claimant to get all the necessary evidence that needs to be produced for a valid claim and allows the company to adjudicate a claim with full information.

4. Claim costs: Inclusion of a survival period would lower the claims cost (as only those who survive the illness will be eligible for a claim) and hence would make critical illness cover more affordable.

#### 4 (ii) Adjustment for overlaps

Overlaps arise when any of the listed illnesses are strongly correlated with one or more of the other listed illnesses. By correlation we mean occurrence of one of the critical illnesses influencing or being influenced by the occurrence of one or more of the other listed critical illnesses.

For instance, let us assume that Heart attack and Coronary Artery Bypass Graft (CABG or in loose terms, Heart bypass surgery) are two of the covered events. Let us also assume that evidence suggests that a large proportion of individuals who undergo CABG had an history of at least one Heart Attack. In such a case, we do not expect to pay all incidences of CABG claims as to a large proportion we might have paid a claim for Heart Attack. Hence we may consider reducing the incidence rates of CABG for this overlap with Heart Attack.

All such overlaps will have to be identified and the corresponding incidence rates will have to be adjusted for such overlaps.

#### Accelerated CI

In case of accelerated CI benefits, the benefit is paid out on the earlier of death or critical illness and hence there is an overlap of CI claims with the death claims. Mortality rates include deaths as a result of critical illnesses too but in case of deaths as a result of critical illness, a claim would have been made for the incidence of critical illness.

To account for this overlap, we could either adjust the mortality rates or the critical illness incidence rates. However, it is customary to adjust the critical illness incidence rates.

A relatively simple adjustment for risk premium rates for an accelerated critical illness policy is:

$ix - kx * qx$

where

- $ix$  is critical illness incidence rate (which is the sum of incidence rate for each of the illnesses adjusted for the overlaps with other illnesses)
- $kx$  is proportion of deaths due to critical illness
- $qx$  is mortality rate

In the above formula, the expression ' $kx * qx$ ' reduces critical illness incidence rates to allow for those deaths that were caused by a critical illness and are already included within the mortality rate.

These rates would then be added to the mortality risk premium rates say  $qx$  to arrive at the risk premium rate for the accelerated critical illness risk and the mortality risk.

### Stand alone CI

The sum of the incidence rates of each of the covered illnesses adjusted for overlaps with the other illnesses is considered as the base rate on which adjustment for survival period needs to be made.

If  $i_x$  is the critical illness incidence rate then  
 $i_x * \{\text{probability of surviving the survival period}\}$   
 would be the risk premium rate for the standalone product.

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### 5 (i)

Free cover limits (FCL) is the level of benefit amount in a group insurance scheme up to which no individual underwriting is required.

Medical information or individual underwriting will apply only to those whose benefits are above the free cover limit and underwriting will be done only for the amount in excess of the FCL.

### 5 (ii)

Factors that need to be considered while setting free cover limit in a takeover scheme

- Reason for the group to switch insurers
- Type of industry
- Hazardous occupation or locations
- Whether the cover is compulsory or are there optional covers
- Size of the group
- Benefits provided
- Benefit levels
- Increases in cover amounts (if sought)
- Terms of benefit (scope of benefit, waiting period, survival period, definitions and exclusions)
- Average and standard deviation of benefit amounts
- Existing free cover limits
- Insurability conditions for members at the commencement of the scheme and for the new members who join the scheme during the policy year
- No. of members who had cover amounts above the free cover limit in the previous year(s) and information on underwriting decisions (who produced medical evidence and who did not, date of underwriting and decisions including rated, declined lives and lives for whom bespoke terms were quoted)
- Experience data - exposures and claims (including paid, reported but not yet paid, repudiated claims)

[5]

### 6 Relevance of past experience

Past data needs to be analysed to understand the group experience and the characteristics of the group that is being considered.

The first step would be to analyse the portfolio and the claims history to understand their relevance and appropriateness for the purpose of calculating burning cost and the final premium rates.

While doing so the following shall be considered

- Data quality (completeness and accuracy)
- Changes to benefits provided
- Changes to benefit amounts

- Changes to lives covered
- Changes to working conditions, location etc
- Changes to other benefits provided (for instance, changes to other compulsory health covers provided by the government might have an impact on the group scheme being considered)
- Premium increases and other changes to the terms of insurance (this might have an impact on optional covers)
- Unreported and unpaid claims for all years for which claims development is incomplete and data to calculate claims reserves for such claims

The actuary may have to make adjustments to the past data for any of the above factors so that the data is relevant for pricing purposes.

#### Burning cost calculation

The objective is to calculate claims cost that we could expect from the group scheme during the policy year for which cover is being considered.

Burning cost could be historic or prospective based on whether it is calculated only based on the past data (say, the average claims cost for the number of years for which data is available) or it is calculated by projecting the claims data into the future using the trends seen in the past data and adjusted for future claims inflation.

Historical burning cost is the claims cost per unit of cover amount based on the past data.

Prospective burning cost is the expected claim cost per unit of cover amount which is the historical burning cost adjusted for changes in the factors mentioned above and the future expected claims inflation.

Irrespective of whether it is historic or prospective, the calculation would need to include estimates of all claims reported but not settled and claims incurred but not reported for the years for which claims development is incomplete.

In case of IP contracts adjustments need to be made to take into account the present value of future claim payments arising from sickness inceptions occurring during the relevant year.

The burning cost thus calculated could be compared against the (risk) premiums paid for the relevant period. This will indicate the profitability of the scheme.

#### Book rate

Based on the company's experience with the other similar groups or from other experience (say reinsurer's support), the company would be able to price the scheme. The rate that the company would quote in the absence of any experience from the scheme and which is based on company's internal pricing approach is called the "book rate".

#### Experience rating and credibility adjustment

Experience rating is an approach to calculate risk premiums rates by fine tuning the book rate to reflect group specific claims experience.

The extent to which the burning costs calculated using the past experience will be used in calculating the final rates would depend on how credible the past experience is.

For this purpose a credibility factor is calculated either based on the total exposures or total claims (either amounts or lives) in the experience data.

Credibility factor is a factor between 0 and 1 and it represents the proportion of the final risk premium which is derived from past experience. The balance,  $(1 - \text{credibility factor})$ , comes from the book rates.

i.e. if B is the insurer's standard risk premium (or "book rate") that the insurer would quote in the absence of any group specific experience, and P is the equivalent risk premium based on the past experience of the group, then the risk premium charged would be calculated as:

$RP = Z * P + (1 - Z) * B$  where Z is the credibility factor for this group scheme ( $0 < Z < 1$ ).

The larger the group (either by exposures or by claims), relevant and stable the experience, the bigger will be the credibility factor. Thus for very large group schemes with large exposures and relevant claims experience, the burning cost calculated from the group experience shall be considered as 100% credible and hence would be used as the risk rate relevant for the benefit insured.

[10]

7 (i)

Morbidity deterioration while deriving incidence rates

- Incidence rates are usually derived based on past experience or data from the past. In order to derive incidence rates that are relevant to the current date, trends since the date of experience till current date need to be estimated.
- If historic trends are derived from a source that is different from that used in the calculation of the incidence rates, then adjustments need to be made to make it relevant. For instance incidence rates might be based on industry statistics but deterioration trends might be available only from population statistics. In such a case, population trends will have to be adjusted to make it relevant to be applied to the results from insured lives.
- It is also pertinent to understand the reasons behind the trends rather than just considering the level of past trends. Estimate of future deterioration or improvement would depend on the cause of past trends and how they are expected to behave in future.
  - o Some factors affect the overall level of incidence rates and persist for a long duration. Examples are: increase in the availability of organs (which might increase "major organ transplants") and newer non invasive surgeries (which might reduce incidence of "coronary artery bypass grafting" which is an "open heart surgery").
  - o Some factors cause a spike in incidence rates for a few years but do not increase the incidence rates in the long term. For instance, new diagnostic techniques and increased awareness on early diagnosis might temporarily increase the number of diagnosed lives but it doesn't increase "new" incidences.

Morbidity deterioration in pricing

- Incidence rates which are relevant as on the date of pricing include trends from the past till date. But pricing need to reflect the trends expected in future.
- Usually incidence rates are adjusted to reflect the features of the product, the target market and the sales process. Similarly while deriving deterioration trends these factors should be considered. Additionally trends from the past for each of the illness will have to be understood for its relevance to the present and the future while projecting future trends.

- The term over which such trends need to be projected depends on the term of the contract, nature of guarantees and the acceptability of reviewing rates and terms (from the policyholder and the regulatory perspective).
- Future trends in morbidity are influenced by policyholder behaviour (moral hazard, anti selection, increased awareness and hence early diagnosis) and medical trends, both of which are hard to predict and model. Hence stress tests by varying morbidity deterioration may have to be conducted.

#### Morbidity deterioration and provision of rate guarantees

- Theoretically, non guaranteed rates offer ultimate flexibility in resetting rates to reflect the actual experience as it evolves.
- But in practice such a flexibility is impaired by the following:
  - o It might be difficult to reset rates till credible experience emerges from the portfolio. Depending on the volume of sales and the product features (especially waiting periods and the level of underwriting) it might be a few years till credible evidence emerges.
  - o Premium reviews are usually based on the emerging experience. But there is always a time lag between the emergence of such experience and its implementation as rate reviews. This might be aggravated by the regulatory requirement to get approval for all changes to premium rates and the need to provide advance intimation to policyholders before increasing the premium rates in their contracts.
  - o It might not be practical to reset premium rates each year as this might invite regulatory intervention and might also affect company's image in the market.
  - o There are frictional costs while implementing premium increases. For instance, communication to policyholders and the regulator (wherever necessary), changes to the policy administration system etc. Additionally, premium increases will lead to anti selective lapses ("good" lives lapse while "bad" lives remain in the portfolio). Considering such costs small and frequent premium increases are usually avoided.
- Hence there is an exposure to future morbidity deterioration even under contracts where there are no explicit rate guarantees.
- Thus even while pricing such non guaranteed terms, it would be prudent to include morbidity deterioration at least till the expected date of first premium review.
- The longer the period of rate guarantees the larger the exposure to future deterioration in morbidity incidence.
- The expected level of deterioration in the future and the confidence with which such trends could be estimated would drive the duration of guarantees.
- If future deterioration cannot be predicted with any reasonable level of confidence then long term guarantees cannot be offered. Even short term guarantees shall be priced with a large margin over best estimate trends. Hence companies might restrain from offering any rate guarantees.
- If the expected deterioration is large, even if such deterioration could be estimated with a high level of confidence, loadings for such guarantees on the rates are expected to be large. This might affect the marketability of long term guarantees.
- Apart from increasing the cost of insurance, long term morbidity deterioration will also increase the economic risk capital required on such contracts and hence result in large increases to premiums.

## 7 (ii)

## Policyholder's perspective

## Advantages:

- Guarantees are expensive. Premiums rates on contracts with reviewable rates are expected to be lower than those under contracts which offer guaranteed terms.

## Disadvantages:

- Under reviewable contracts, increase in premium rates is expected in the long run. The possibility of premium increases makes it difficult in long term planning.
- Triggers for premium reviews are less clear cut and often are not clearly specified in the contract. Policyholders will have to bear the cost even if such reviews are due to bad risk management by the insurer rather than a general deterioration in incidence rates.

## Insurer's perspective

## Advantages

- It is difficult to model and forecast morbidity deterioration which is required while pricing long term guarantees. In the absence of reliable data and experience , reviewable rates are preferred.
- Pricing and capital models are much simpler for pricing reviewable contracts as compared to contracts offering long term guarantees.
- Underpriced long term guarantees on a large portfolio of contracts have the potential to cause severe capital strains over the long term and could affect profitability and solvency of the insurers. Reviewability provides insurers an additional tool to manage the risk appropriately and hence avoid large capital infusion.

## Disadvantages

- It is difficult to define all the triggers that would cause a premium review for policyholders and hence such increases might be difficult to communicate.
- If premium increases are necessitated by worse than expected experience, it might be difficult to pass it on as premium increases if such a result is due to bad risk selection and inefficiency in claims management. Thus reviewability does not offer flexibility at all instances.
- There are practical difficulties in implementing premium reviews and involve frictional costs which might make premium reviews impractical.
- The way reviewable contracts are managed creates PRE which needs to be managed. For instance, not increasing premiums for a portfolio of contracts over a long period creates a reasonable expectation that premiums would never be increased. Such an expectation is further strengthened if the rates under other CI contracts are reducing – even though not necessarily due to factors those are relevant to the portfolio under consideration.

[15]

## 8.

The key issues that can be included in the report are grouped into four broad topics.

- Purpose of initial underwriting
- Effectiveness of initial underwriting in long term health contract versus life contracts
- Simplified initial underwriting and rigorous claims underwriting
- What is intended in claims underwriting, its advantages and drawbacks.

### Purpose of initial underwriting

- To weed out severely substandard lives
- To rate all lives fairly by classifying risks into homogenous sub groups
- To select lives such that the portfolio experience does not depart too much from the expected experience on which it has been priced
- To identify lives which are substandard so that bespoke terms could be quoted
- To offer bespoke terms to applicants who cannot be offered standard rates and terms (for instance, offer specific exclusions or offer a different product)
- To conduct financial underwriting for large cases to avoid over insurance

Underwriters do get involved in the product development process in checking effectiveness of definitions and exclusions, setting the level of initial underwriting, vetting proposal forms and specific contract terms.

Further underwriters provide expertise in handling specific complex claims.

### Effectiveness of underwriting in long term health contract versus life contracts

Underwriting in life contracts tends to focus on the illness that impairs the life expectancy of the applicant. Health information provided in the application form is checked against how it impairs the mortality of the applicant as compared to a “standard” life with the mortality experience as assumed in pricing. While doing so, impairments that do not affect mortality are ignored from the rating process.

Underwriting in health contracts looks at the health status of the applicant from the perspective of the propensity to claim. Since multiple claims are possible for multifarious reasons it is often impossible to check all possible triggers which might cause a claim.

Further, the definition of “standard” lives in health contracts is not as well defined as in the case of life contracts. For instance, there are mortality tables for medically selected standard lives. Apart from critical illness (where standard tables are available), there are no standard tables for several of the health risks which are being insured – for instance, there are no standard tables providing hospital cash experience of medically selected standard lives. This adds additional complexity while rating sub standard lives through underwriting.

### Simplified initial underwriting and rigorous claims underwriting

Given the challenges in underwriting health contracts one approach adopted by companies is to have clear sales process (to explain who is eligible and who is not eligible) and well defined documents and contracts (on what is covered, when the cover starts, waiting periods before risk commencement, definitions and exclusions) so that the applicant to a large extent will have to “self select” by understanding the conditions.

If the applicant is assumed to have understood the benefits clearly, it might well be enough if the applicant confirms the eligibility to avail the defined benefits by signing of a simple declaration which states that he/she has understood the terms and conditions and that to the best of his/her knowledge does not suffer from any of the (listed) impairments or illnesses.

Applicants are classified into homogenous groups based on factors like gender, age group, occupation and minimal (but useful) personal health information declared by the applicant.

Two possible approaches to accepting such applications are “accept/decline” basis (where the application is rejected if any of the additional risk factors are found without further underwriting) and “multi stage underwriting” basis where incremental information is sought based on the information gathered in each of

the underwriting stage (i.e. statement from personal medical consultant might be sought based on the information in the application form which might trigger further medical tests and so on).

Since applications are accepted largely on the basis of self declaration, it is pertinent to check at the point of claim whether the claim cause is expected of a person who has declared like what he had at the time of application. This is often stated as “claims underwriting”.

What is intended in claims underwriting, its advantages and drawbacks.

The purpose of such claims underwriting is as follows.

- To repudiate claims if there has been severe non disclosure by the applicant
- To check whether the claims falls within the definition and not in the exclusions list as defined in the contract terms
- To check accumulation of claims and to limit claims from multiple policies
- To collate information that will allow fine tuning initial rating process and bettering application forms
- To monitor and reset terms (on renewal) so that the portfolio experience does not depart too much from the expected experience
- To identify lives which are substandard so that bespoke terms could be quoted at renewal

As could be seen, the objectives are similar to those with initial underwriting.

Need for claims underwriting does not restrict itself to contracts which are issued on simplified initial underwriting. Even in contracts which have been more rigorously underwritten at the applications stage it is required to check whether the information declared by the applicant was correct and whether the claim falls within the definition and not excluded as per the contract terms. Claims underwriting is also an effective tool to check the quality of initial underwriting and is an essential part of the control cycle.

Advantages of replacing rigorous initial underwriting with claims underwriting

- Reduces upfront costs due to initial underwriting
- Could be attractive to applicants
- Repudiation of claims is tougher when an insurer adopts rigorous initial selection process as the companies have an opportunity to check all possible evidence at the application stage.
- Might increase the profits arising from “good lives”

Drawbacks of replacing initial with claims underwriting

- It might be difficult to prove “anti selection” in certain jurisdictions where the onus is on the insurer to prove that the applicant was aware of the impairment or ailment and had withheld information at the time of application with an intention of defrauding the company. In such jurisdictions, repudiation of claims from anti selective lives using claims underwriting might not be possible and hence underwriting at application stage might be the only efficient solution to weed our anti selection.
- Declinature of applications do not make it to the press but repudiation of claims do. Hence decisions due to claims underwriting might cause bad press and impair insurer’s reputation.

[12]

9 (i)

Factors that would be considered while making a reinsurance decision

- Size of the insurer and in particular the available free assets
- Insurer's attitude towards risk in general and specifically, to the risk posed by that product line or the specific product
- Insurer's experience in pricing and managing the risk from the product (if any past experience is available then credibility of such experience would define the insurer's comfort in managing such risks without any external support)
- Expected volatility in the results from the portfolio and its impact on the overall results of the insurer
- Available reinsurance capacity and cost of reinsurance
- Impact of reinsurance on reserving and capital requirement (and hence its impact on capital efficiency and return on capital)
- Need to consider reinsurance as a source of financing rather than as a mere risk transfer tool
- Regulatory guidance (or restrictions) on reinsurance

(ii) Suggested reinsurance arrangement:

“Quota share arrangement where only the morbidity risk is reinsured with x% retained but subject to a maximum cap on benefits retained.”

For example, reinsurance of morbidity risk under a quota share arrangement with retention being minimum of (25% of each benefit, stated maximum amount for each benefit).

Reasons for proposing this arrangement

Firstly a proportional reinsurance is suggested as it reduces the size of the ceding insurer's net account (i.e. sum retained) and allows equitable risk sharing between the insurer and the reinsurer.

While considering the fact that all contracts are expected to be reinsured, quota share is preferred over surplus arrangement.

Since there is no explicit intention to reinsure all risks (morbidity, lapses, expenses etc), coinsurance (or original terms reinsurance) is not proposed. Further if the intention is to restrict the retention (so as to avoid exposure to large risks) then co-insurance might not be suitable.

Further, there is no evidence from the information provided that the contracts of this product will have sufficient reserves which would make sum-at-risk attractive. Hence quota share of morbidity risks is proposed.

Since only a proportion of the risk needs to be retained and exposure to large cover amounts needs to be avoided a maximum cap is placed on retention of each benefit.

The advantages of this arrangement are

- helps to spread risk
- helps reduce parameter risk
- helps to reduce exposure to large cover amounts
- helps reduce the impact of volatility of claims on the portfolio results
- administratively simple
- could be used for financing new business strain
- might reduce reserving and capital requirement.

The main disadvantage of this arrangement is that it cedes some proportion of each risk and hence it passes a large share of any profit to the reinsurer.

(iii) Reinsurance as a financing option

A proportional reinsurance arrangement could be structured in such a way that the reinsurer pays an upfront reinsurance commission to finance the insurer's new business costs or any other revenue need. Such upfront financing is possible by "factoring" the future margins in premiums.

"Recovery" of the upfront financing is spread over a number of years and is done through two ways.

One approach could be by adding an explicit load on reinsurance premiums or paying no further commission while receiving a portion of the gross premiums.

In both these approaches repayment of the initial financing is contingent on a insured risk (lapse risk) and hence provides relief from showing the initial "loan" as a liability.

The former could be arranged as part of a standard risk premium reinsurance arrangement while the latter is more efficient if arranged as part of a coinsurance deal.

The second approach is structuring the repayment as a first charge on any surplus arising. In this approach, recovery is contingent on any surplus arising and hence the financing is not considered as a loan.

[13]

[Total 100 Marks]

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