Institute of Actuaries of India

Subject SA2 – Life Insurance

November 2013 Examination

INDICATIVE SOLUTIONS

Introduction

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiner have given credit for any alternative approach or interpretation which they consider to be reasonable.

Solution 1 :

i) The merged entity will have single fund in which the new business will be written and the existing business will be maintained.

It is not spelt out what would be the pattern of the surplus distribution for company B policyholders (post merger).

It is unlikely that the company A post merger will change its surplus distribution pattern from existing 90:10 to 95:5 for its existing policyholders as the existing pattern must have taken into consideration the competitor's practices, the return on the capital deployed by the shareholders, the interests of the stakeholders and the general economic, market and the regulatory environment prevailing in the country of operation.

The possible options will include:

- To continue with 95:5 surplus distribution pattern post merger for the existing policyholders of Company B and 90:10 for all the new policies written in the single fund of the merged entity.
- 90:10 surplus distribution patterns for all policyholders post merger.

Option 1

Two surplus distribution patterns in the same fund may have regulatory issues of whether it is permissible under existing laws and the extent of subsidy allowed for supporting bonus for the existing policyholders of merged entity.

As there will be one fund post merger, to arrive at the surplus separately for two distribution patterns separate fund for each group of policyholders will be required. If the fund cannot be separated, the levels of bonus to be declared for this group of existing policies (of company B) the amount of cross subsidy and hence the regulatory compliance may be an issue.

If there are identical products sold by company A, it is likely that, with other conditions being reasonably similar, the level of reversionary bonus declared for these participating polices of company A will be lesser than that declared for the comparable participating policies of company B. Post merger if this situation continues there may be marketing issues.

It is unlikely, however that the two companies have exactly similar products with similar experience.

It may be argued that a notional fund with ring fenced assets could be a solution which may mean capturing all the revenue account items separately for this group of policyholders.

Given that company B is a medium sized company operating in a large number of offices throughout the country, capturing all the revenue account items separately for this group of policyholders in addition to those being captured for the policyholders of company A, may be an issue.

IT system will have to be updated to capture the revenue account items separately. Additional sets of account heads will be required to be set.

Even if this objective is administratively achieved it would be costly, time consuming and will increase the complexity of accounting.

Other investigations and analysis will become more complex and subjective. For example the expense analysis may now additionally require two sets of allocation ratios and apportionments of common items like salary etc. may become extremely complex and will incorporate further subjectivity.

The valuation basis may have to be set differently for two different set of policies. As the number of notional funds will increase, so will be the category of assets backing each of the notional funds. This is likely to add more complexities to the fund management.

The yield calculations may then be different for two sets of policyholders under similar line of business. Any significant difference in yield between these two funds will be difficult to explain to the stakeholders.

As this group of policyholders form a closed group with no new business written under 95:5 surplus distribution pattern the notional revenue account prepared for this set of policyholders will generate revenue deficit over time as the premium income will gradually reduce and the outgo will increase as these policies reach maturity.

As more policies exit from this group of policyholders per policy expenses are expected to increase thus requiring higher expense reserves to be kept. The valuation surplus is expected to reduce which may lead to the current level of bonus not sustainable.

Shareholders may then be expected to inject additional capital to support the level of bonus to meet the policyholders' reasonable expectations. As there is a single fund post merger, the future treatment of this capital may be less clear. There may be regulatory constraints as well in declaring the bonus when the fund is in deficit.

As more capital gets lock in and the size of the fund itself reduces the investment freedom also reduces thus leading to lower investment returns for this group of policyholders and hence lower level of reversionary bonus.

Option II:

The reversionary bonus for existing participating policies of company B policyholders may reduce significantly. The sudden reduction in the level of reversionary bonus may not be in line with policyholder expectations. Actuarial Practice Standards (APS1) issued by the Institute of Actuaries, India stipulates that the reasonable expectations of the policyholders should be kept in mind while distributing surplus.

The Board approved bonus policy of the companies may have set out the factors that would give rise to changes in reversionary bonus rate generating policyholders' reasonable

expectations. These expectations will also have been influenced by the respective company's past practice.

The general business and economic environment of the country in which these companies are operating may not have changed significantly thus and the long term expected yields on the investments may not have changed significantly. As the long term expected yields on the investment has the largest impact on the level of reversionary bonus any significant reduction in bonus as a result of change in surplus distribution pattern from 95:5 to 90:10 may appear unreasonable particularly when this group of policyholders took the policy with the knowledge of 95:5 surplus distribution and such large change are neither documented or notified, nor had happened anytime in the past.

If the company B had been no similar such large changes in the reversionary bonuses in the past, any significant reduction at present may be considered unreasonable. Treating policyholders fairly would mean that payouts should remain based on asset share with no abrupt or sudden changes in the input parameters.

It is possible that this would lead to intervention by the regulatory authority if it is felt that the reduction in bonus was not reasonable.

Further, any such large reduction in reversionary bonus rates may also lead to bad publicity. This bad publicity will lead to the general dissatisfaction among the policyholders which in turn may lead to increased surrender rates.

It could also lead to lower levels of new business particularly in those segments where the company B is operating. The impact on existing or new business levels is particularly likely if competitors operating in those areas are continuing with the same pattern of surplus distribution i.e. 95:5 thus declaring higher bonuses under identical situations.

One possible way out could be to gradually change the surplus distribution pattern from existing 95:5 to 90:10 over a period by varying 0.5 ,to 94.5:5.5,94:6…..etc. This may allow gradual adjustments in level of reversionary bonus over years and thus managing the policyholders' reasonable expectations.

The company's bonus policy will need to be amended which may include notifying the policyholders before the amendments could be carried out. It may also have to notify the Regulator who can intervene to stop such an increase if it did not treat customers fairly.

Further, implementing gradual decrease in the level of surplus distribution to the policyholders may have its own administrative implications. The company may not have sophisticated software which can incorporate the future surplus distribution patterns and the corresponding levels of bonus varying in each of the future years.

The reduction in the level of bonus to the policyholders of company B post merger may adversely impact the brand image of the Company A and may impact its volume of new business.

The dissatisfaction may lead to policyholders exiting their policies by way of surrender.

The combined effect will be that per policy expense may increase as there will be fewer policies to spread the expenses resulting into higher reserve and hence lower free assets.

The reduction in investment freedom may lead to lower investment returns thus further impacting the level of bonus to policyholders.

(15 Marks)

ii)

(a) Sources generating policyholders' reasonable expectations:

- Regular bonus rates declared by the company
- Level of bonuses declared in the past
- Level of bonus of the competitors in the industry
- General practice followed by the industry in the past as regards bonus
- Details provided in the sales brochures
- Wordings of policy documents
- Bonus notices
- Benefit Illustrations
- Media advertisements
- Total benefit payouts on survival of the policyholder till the end of term
- How it compares with the industry as a whole
- Treatment of fairness between different classes of policyholder
- Treatment of fairness between policyholders and shareholders

(2 Marks)

(b)

If treating customer fairly is incorporated in the company policy the stakeholders including prospective and existing consumers will have confidence in the company that their interests will be taken care of.

Items which may be included in the company policy of treating customer fairly:

- Products shall be designed to meet the needs of the target policyholders and that no new policy will be written if this is detrimental to the interests of the existing policyholders.
- Customers shall be provided with products that shall perform as the company has led them to perform
- Customers shall not face unreasonable post-sale barriers imposed to change product, submit a claim or make a complaint.
- Investment strategy including the degree of matching and the approach to assets of different liquidity and volatility shall be disclosed.
- The interests of the interests of policyholders shall be taken care of, especially in those areas where the company has discretion where the policyholders may be adversely affected financially.

  Examples include
  - Determination of benefit amounts payable under with-profits policies
  - Approach to surrender values and the amount payable on surrender
  - Charges to with-profits and Unit Linked policies

- Unit pricing etc.

- 90% (say) of with-profits payouts shall range around 100%, say 90% to 110%, of unsmoothed asset share.
- All communications, whether in writing or orally, to the existing and prospective consumers shall be accurate, clear, unambiguous and not misleading.
- All the customers shall be kept appropriately informed before, during and after the point of sale.

- Where the customers are entitled to receive the advice from the company the advice shall be professional and suitable and shall take into account of their circumstances.
- The advertisements authorized by the company shall not be unfair or misleading including advertisement that:

  - ✓ Fails to clearly identify the product as insurance
  - ✓ Makes claims beyond the ability of the policy to deliver or beyond the reasonable expectations of performance.
  - ✓ Describes benefits that do not match the policy provisions
  - ✓ Omits to disclose or discloses insufficiently the contents
  - ✓ Gives information which is misleading

- The company shall have an independent assessment by say with profit committee whether the fund has been run in compliance with the company policy of treating customer fairly

(4 Marks)

iii) The asset share is the retrospective accumulation of past premiums, less expenses and the cost of cover, at the actual rate of return on the assets. The accumulation could be carried out for a single contract or a group of contracts.

The company though is a well established company it does not, at present, declare reversionary bonus based on asset shares, as such the director has suggested basing its bonus declaration on asset shares.

If payouts are currently markedly greater than or less than asset shares then smoothing in line with PRE might mean that it takes several years before payouts can be brought in line with asset share.

- In implementing the suggestion, however, the company may face difficulties in calculating the asset share on either
  - ✓ Portfolio level – line of business wise or
  - ✓ Product level or
  - ✓ Policy level
- The company needs to decide whether it will be calculating asset share on a policy by policy basis or at a portfolio level.
- And whether to use smoothed or unsmoothed asset share

- Ideally the company should be calculating the asset share on a policy by policy basis but given the size and duration of operation of the company it is likely that the relevant data necessary to calculate the asset share may not have been captured.
- If smoothed asset shares are used to determine payouts, and unsmoothed asset shares are held as reserves, the reserves would not necessarily reflect the expected benefit payouts to policyholders.
- Some of the policies may be of very long term and hence capturing the relevant data at this stage may be extremely difficult and may not be practically possible.
- Even if the data is captured it is likely that there may be shortcomings in the data recorded and any calculation based on the inaccurate data may be spurious.
- It is likely that the company being well established has appropriate IT system in place, but extracting the data for the purpose on hand may be difficult due to data complexities and its completeness to suit the purpose. The ability of current hardware and software to cope needs to be investigated.
- Further the IT system of company B may not be that robust and even if it has recorded the past information on its policy data the format used may be different than that used by company A thus leading to difficulties in data merger.
- If the company B post merger continues to follow 95:5 surplus distribution pattern the merged entity will be maintaining two sets of data involving time and additional cost.
- Nature of Alterations allowed by the company in the past may further make capturing useful historical data difficult.
- Representative sample policies or model points may be used for calculation of asset share as there is a large volume of data. However, number and choice of representative model points itself may be an issue. Calculating individual asset shares removes the need for assumptions to be made in selecting "representative sample policies" or model points.
- On the income side capturing the past history accurately may be difficult if the policies have been altered and thus the premium information prior to the alterations may have been lost making the accurate policy asset share improbable. It is also possible that the premiums in the past were not level throughout the term of the policy and the complete premium history may be difficult to be recouped.
- The yields on the investments backing the policy liability and hence the investment income may not have been recorded appropriately thereby making projection of year end funds away from accuracy.
- The business may consist of all combinations of policies i.e. single premium policies, regular premium policies, reduced paid-up policies and the proportion of these may be different in different years. As expenses incurred forms an input parameter in calculating asset share, the policy wise or group of policies wise or at portfolio level the allocated expenses each year in the past will be needed.
- As it is unlikely that the company in the past might have carried out a full expense investigation each year.
- While the company may have more accurate information pertaining to the recent years making the expense apportionment possible to some extent such an attempt in respect of say 10-15 years back may be difficult due to data issues.
- For earlier years where information may not have been recorded, an approximation based on sum assured or premium or number of policies may be attempted. These may at times be difficult to explain to the stakeholders.
- Given the volume of data and complexity of analysis, the cost vs. benefit need to be considered. The expense investigation for each of the past relevant years may be cost prohibitive.

- It may be that the company doest not have the necessary administrative infrastructure including staff to carry out the exercise.
- The mortality experience may not have been analysed in details in each of the past relevant years suitable to carry out the exercise.
- The company writes non participating policies as well and the details of the profits from this line of business which forms part of asset share may not have been recorded in details for each of the past relevant years.
- Companies use a variety of methods to determine what profits to allocate to asset shares from without-profits business and none can be precise. Measuring the amount of profit itself is an issue and could be based on surplus arising using a statutory, realistic gross premium or embedded value basis.
- Companies have tended to allocate these profits by a percentage addition to individual asset shares or an explicit addition to assumed investment returns-needs to be decided by the company which method to use.
- Profit arising from the surrender or lapsed policies may not have been recorded properly to suit the purpose on hand.
- Needs to decide whether to allocate these surrender profits to asset share or to the inherited estate.
- The cost of options and guarantee offered under various products and policies may not have been calculated or captured for east past years.
- Record of tax rates, any transfer from estate may not have been recorded.
- Further, need to decide whether tax rates to be used in calculations be determined based on the actual tax rates paid or could be notional based on the level of tax rates in different years.
- Apportionment of excess assets to policyholders by addition to asset share will indirectly increase maturity benefits because these are based on asset shares. It would not visibly increase current guaranteed benefits and so might be difficult to communicate clearly to policyholders.

(12 Marks)

(iv)

- The company will require the ability to produce individual asset share calculations on policy anniversaries
- Sending asset share to each eligible policyholder may mean that the company may have to calculate individual policy asset share.
- Even if the company can produce individual asset shares at the year end for valuation, it may not be able to produce asset shares on policy anniversaries as they occur throughout the year.
- It is also likely to be more problematic than being able to produce asset share calculations for all policies at a single date each year. This is because of the difficulties in establishing the actual experience to use in the calculations. For example, investment performance may be measured each calendar year or month, rather than daily. Expense analyses may determine expenses for each calendar year. Approximate approaches may therefore be required.
- Benefit statements are likely to be issued all at the same date and sending separate statements will increase administration work and costs.
- If the company chooses to calculate the asset share at product or portfolio level it may be reasonable to specify the range as a percentage of asset share say 90% to 110% or

such simple relationship to asset share in order to manage policyholder's reasonable expectations.

- The effect of asset share at a product and portfolio and the final benefit payout being in the specified range would be that in some cases the final benefit payout may be more than the asset share while in other cases it will be less than the asset share.
- If the benefit out is less than the asset share this will lead to policyholder's dissatisfaction and the complaints may pile up.
- Obviously the policyholder will compare the actual to what was informed to him by the company. The implication arises when the amount actually paid significantly differ from what has been informed to the policyholder.
- The company also needs to decide whether to communicate smoothed or unsmoothed asset share. The method actually followed should be consistent over time and should be consistent with what has been communicated.

- The communication to the policyholder about the asset share and how the ultimate benefit payouts would relate to the asset share needs to be clear, unambiguous and not misleading. The marketing officials shall be burdened with the additional responsibility of explaining the policyholders and the sales literature should disclose the relevant details.

- This may however assist improving the sales if the method is consistent and fair.

- The downside however is that the level of asset share communicated to the individual policyholder will generate expectations that his ultimate benefit payout will be at least equal to or more than that specified.
- The company needs to consider this while setting the surrender value as any surrender payout being more than the asset share may lead to antiselection.
- Policyholders later may expect more explicit information about asset shares in the future, in order to check that they really were receiving their "bonus".

(6 Marks)

(v)
a)

- The company policy on bonus distribution should reflect the fund performance and should be fair to policyholders.
- Treatment of emerging surplus/deficit from smoothing of payouts and consideration of Policyholders' reasonable expectations (PRE) should be documented.
- The extent to which bonus may vary over years should be documented.
- Future bonus assumed in the fund projection and consistency with the current bonus strategy should be documented.
- The company should document the benefit payouts as a proportion of asset share.

(2 Marks)

b)

- The company's approach to surpluses and deficits arising from non-participating business written in the participating fund should be documented.
- Maintenance of single fund by the company post merger is in conformity with the guidance note 6 which says that it is acceptable to write non-participating business in the participating fund with the condition that the pricing of products should follow actuarial principles, should be fair to policyholders and should not put undue strain on the fund.
- Surpluses and deficits from non-participating business written in the participating fund should be treated consistently, and in accordance with the reasonable expectations of with profits policyholders.

(2 Marks)

c)

- The guidance note 6 refers to shareholders" transfers as the shareholders share of the cost of bonus. These are calculated as stipulated in the IRDA Distribution of Surplus Regulations.
- This can be attributed to the relevant product grouping to determine the asset share for each policy grouping. Asset shares would not typically reflect any transfers into the fund to support new business strain etc
- It is normal practice for deductions for taxation to be applied to the asset share calculation in order to fund for the taxation on the cost of bonus.
- The company should however consider the reasonableness or otherwise of making deductions for taxation from the asset shares, taking into account the regulatory filing, sales literature and other policyholder disclosures and policy wordings when the tax computation is performed at an aggregate company level and tax is not payable due to losses elsewhere in the company.
    - To the extent it is considered reasonable, the extent to which the participating policyholders should benefit from the any deferred tax asset should be considered.

(3 Marks)

(vi) About inflation linked bond:

- There does not appear to be a protection of principal as in case the inflation becomes negative then redemption may be below par.
- If the supply of such bonds is irregular liquidity may be an issue.
- The selected index base year may be changed by the Government or some new more representative index may evolve.
- Major amount of payment is back ended as the inflation impact is adjusted to principal which is payable only on redemption date. The real interest rate is payable during the term.

The ALM issues:

- The company should invest so as to maximize the overall return on the assets, subject to the risks taken being within the financial resources available to it.

- Perfect matching may remove the upsides of mismatch as such allowing some mismatch may be strategic.
- Expense usually is a significant proportion of the total liability. Future expenses are likely to be matched by assets increasing in real terms. Both equities and index-linked bonds provide this feature. The inflation linked bond may be used to hedge the risk of expense overrun.
- It may be that the company currently is using equity investment for hedging the inflation risk on a long term.
- The company needs to analyse the current experience and then take a call whether to buy this instrument.
- Asset-liability matching not only requires that there is enough money in total to meet liabilities, but that cash flows are such that money is available at the right time. If the supply of such bonds is irregular, liquidity and hence the asset liability cash flow matching may be an issue.
- The indexation shall have lag whereas the expenses incur on real time basis.
- A portfolio of index-linked securities might theoretically be able to be found to match the annuity outgo. Providing that the assets can all be held to maturity, the position is exactly as for fixed annuities.
- If the inflation linked bond issue is relatively small and is not going to be issued frequently, there may be less opportunity to achieve an increased yield at increased risk.
- If the company has inflation linked annuity payouts, the inflation linked bond may be a good match.
- The instrument may be a good match for expenses incurred under non unit part of the linked portfolio.

(4 Marks)

[Total Marks-50]

Solution 2 :

(i) (a)

Hedgeable Risks:

A hedgeable risk is a risk which can be pooled or hedged by using a replicating portfolio or by buying suitable financial instruments available in the financial market. The cost of hedging is given by the market value of those instruments that insurer/insurance company need to buy in order to fully hedged its position.

Non-Hedgeable Risks:

Risks for which a deep and liquid market is not available are referred as non-hedgeable risks. They are the risk for which a market price cannot be observed. The non-hedgeable risks covers both financial and non-financial (insurance risks).

(2 Marks)

b)

As stated above, hedgeable risks can be fully hedged by buying the suitable instruments that area available in the market i.e. by replicating portfolio. The hedging cost are implicit in the observed market price of these instruments. It is, therefore, non necessary to calculate the explicit MVM for hedgeable risks.

(1 Mark)

c)

The MCoC approach is based on market consistent valuation framework. It more appropriately differentiates between risks similar to the way in which the capital market differentiates the risks. E.g. distribution of risk differs greatly between equity investment and equity option. It is therefore consistent with economic balance sheet and it treats all risks in the consistent manner.

MCoC ensures that the cost of risk is measured purely based on the economic cost of holding capital of non-hedgeable risks. This ensures that the cost of risk and any allowances for prudence are clearly separated, and the reserve reflects the estimates of cost of managing risks. The margin for prudence should only only be reflected in the capital held and not in technical provisions. This allows companies to efficiently manage the risk.

This is not the case with the percentile approach – as prudence may be incorporated in both reserve and capital which can lead inefficient management of risk and double counting of risks.

It is fundamentally better for economic capital computation that the margin for prudence is only captured in the SCR and not in Market Value of Liabilities (MVL)

MCoC approach will always reflect the risks inherent in the products while computing in the MVM. This is not always the case if percentile approach is adopted as there is no link between arbitrary percentile chosen and the market price. In addition the percentile approach does not

refer to each risk type separately. Under percentile approach size of MVM varies with underlying distribution of the liabilities.

The MCoC approach therefore, ensures that the company considers the tails of the distribution whereas no consideration is given to the shape of the distribution using the percentile approach.

The most appropriate response/ best possible action from the policyholder's prospective to any potential crises is that some insurance company takes over the liabilities and the best way to ensure the same is to ensure that there are sufficient financial resources to cover these liabilities. The MCoC approach follows the same principle.

The Solvency Capital Requirement (SCR) under MCoC ensures that the insurance company will able to survive stressed situation occurring within one year and still in a position to meet the obligations. It focus on market consistent value of assets and liabilities and therefore calculation ensures that all the information received during the year – potential loss and also any potential reassessment of future risk (including run-off) -is properly reflected. Whereas the percentile approach implicitly force to the insurer/insurance company to hold part of the capital needed to support the business in future years in form of prudent margin – this prudence margin may not be sufficient to run-off the liabilities.

MCoC approach seems to be easier to implement as compare to the percentile approach which is quite complex in nature.

Another key advantage of the MCoC approach is that it is completely transparent and therefore comparable. This may be appreciated by the regulator. The SCR projection can easily be determined using the standard SCR applied to non-hedgeable risks, which means there is only unknown parameter i.e. the cost of holding capital for non-hedgeable risk.

(5 Marks)

(d)

Steps involved while calculating the MVM for non-hedgeable risks by using MCoC approach:

Under McoC approach the MVM of non-hedgeable risk is calculated as present value of cost of future capital requirement of non-hedgeable risks. Following steps would involve in the calculations:

1) Project the Solvency Capital Requirement (SCR) –net of diversification benefits for non-hedgeable risks from time 1 until the run-off the portfolio

2) Calculate the capital charge at each projection year (t) as SCR multiplied by CoC charge (for non-hedgeable risk) in order to arrive at MVM as time t say MVM(t).

3) Discount the projected Capital Charge to determine the MVM

(2 Marks)

(ii)

The IRDA shall generally consider the applicant company's overall financial position, its regulatory record, the proposal of issuance of capital, capital structure post issue/offer of capita; and the purpose to which the share capital proposed to be raised will be applied. In particular the IRDA shall consider the following parameters:

i) The period for which the applicant has been in the life insurance business – the company should have completed 10 years of its operation or any such period as prescribed by the Central Government

ii) The history of compliance with the regulatory requirements by the applicant company

iii) The maintenance of the prescribed regulatory solvency margin as at the end of the presiding six quarter commencing from the quarter immediately prior to the date of filing of application.

iv) Compliance with disclosure requirements / Public discloser requirements

v) Compliance with corporate governance guidelines

vi) Its records of policyholder protection

vii) The Embedded Value of the applicant company – such Embedded Value report shall be prepared by an independent Actuarial Expert (Reporting Actuary) and peer reviewed by another independent Actuary (Reviewing Actuary) and shall be prepared in the manner prescribed by the Actuarial Practice Standard (APS-10) by Institute of Actuaries of India

viii) IRDA generally expect the Embedded Value to be twice of the paid-up equity capital (paid-up capital shall be inclusive of the share premium, if any).

(4 Marks)

(iii) Considerations affecting the appointment of reporting Actuary:

Relevant experience

Before accepting the role to act as either the Reviewing Actuary or the Reporting Actuary, the Actuary should consider if he / she has the relevant experience to carry out such a valuation i.e. the experience of carrying out valuation of Life Insurance Company For The Purpose Of IPO.

If the Reporting or Reviewing Actuary does not have the relevant knowledge and experience to prepare such a valuation, it is essential that the Actuary seek, on a formal and professional basis, the co-operation and guidance of an actuary who does have such experience.

This latter need not be a Fellow member of the IAI, but must be a fellow member of a full member Association of the International Actuarial Association and his/her identity should be disclosed in a preface to the IEV Report or Peer Review Report, as the case may be.

Conflict of interest

In the context of an IPO, it may be expected that the Board of Directors of a company and its advisers have a duty to act in the best interests of the potential investors. In this context, any Actuary who is also a director, must consider carefully whether the two roles conflict bearing in mind duties to policyholders as set out in Actuarial Practice Standard 1 (APS1) of the IAI.

The Actuary should also be mindful of any conflict of interest in his/her accepting the assignment as either the Reporting or Reviewing Actuary required under the IRDA Regulations for this purpose. The Actuary should clearly and explicitly state in the preface to his/her Report that he/she has considered carefully the possibility of conflict of interest and has concluded that conflict of interest does not exist.

I**ndependence**

For an Actuary in a particular situation to describe the advice offered as "independent", the Actuary must be free, and be seen to be free, of any influence which might affect and/or has the potential of affecting the advice or limit the Actuary's scope of advice.

In the context of an IPO, the term „independent" may be described as, inter alia, independent of the parties involved in the transaction, including the life insurance company, its promoters, employees, its other advisors and the potential investors.

The Reporting and Reviewing Actuaries while signing off their Reports should sign off as Fellow members of the IAI and should disclose the nature of relationship with his or her firm; whether sole proprietor, Partner of a Partnership firm of Actuaries or an employee of a company, in case the firm is a company.

(6 Marks)

(iv)

The allowable rider or riders shall be clearly spelt out with regards to their scope of benefits.

In no case the premium relatable to the health related or critical illness riders in case of term or group products shall exceed 100% of premium under the basic product.

All rider put together shall be subject to a ceiling of 30% of the premium of the basic products.

Any benefit arising under each of the riders shall not exceed the sum assured under the basic product

Provided that the benefit amount under rider shall be subject to section 2(11) of the Insurance Act, 1938

Definition of the rider or riders benefits must satisfied the IRDA Regulations and guidelines on the health products.

The rider or riders attached to a life policy shall bear the nature and character of the base/main policy, viz, participating or non-participating and accordingly the life insurer shall make provisions, etc in its book.

(3 Marks)

(v)

- **Level of experience / size of portfolio**

Company A might have been writing term assurance business for fairly longer period than Company B and have significant/ credible experience – more credible the experience the insurer has for a particular class of business, the more likely it would be willing to retain more risk and cede lesser to the reinsurer for that class of business.(assuming that the business is written on profitable terms).

Company B which may have not written significant term business and might have wanted to utilise the reinsurer's experience in respect of devising underwriting procedures or pricing in the past. Reinsurers provide a greater level of assistance to those insurers that are ceding the most business; hence this may have contributed to Company B's low retention.

Company A may have a much larger portfolio of term assurance business, in terms of lives covered, than Company B.

Claims experience volatility is likely to have a much lower impact on a company with a large portfolio of business, and so Company A could be more comfortable retaining a larger proportion of this risk.

- **Risk appetite**

For both companies, the profits/losses on term assurance business are entirely borne by the Shareholders and shareholders could have different levels of risk appetite.

There may be a low risk appetite for Company B, leading to the low retention limit treaty being put in place.

This low risk appetite is likely to have been a more important factor than giving profits away to the reinsurer through ceding too much business for the Company B.

- **External/Regulatory perception**

Company A might be more concerned about external perception, such as Regulator office, market analysts and rating agencies. This is more critical if the insurance company is listed on a stock exchange.

It will want to avoid shocks to its results. However it will also want to avoid giving away excess profits to reinsurers, which it should be retaining for its own shareholders.

External parties including Insurance Regulator/IRDA are unlikely to view a company favourably if it passes most of its insurance risk to a reinsurer. Sensible reinsurance

arrangements where the Risk/reward trade-off have properly been considered will be well received by the market.

- **Source and type of business**

Company B might have used less underwriting than Company A.

Company B might, in the past, have sold its business through channels producing more variable term assurance claims, such as through direct marketing.

Company A's term portfolio is skewed towards mortgage loan and though of bigger ticket size/ premium building society, in which case it would be expected that the claims experience would be relatively light, with a fairly smooth distribution of the likely size of claim.

Company B might have a less well diversified portfolio for example Group business or fewer product lines.

- **Other reinsurance**

The reinsurance arrangements that both companies have in place for their term assurance portfolios may be heavily influenced by the reinsurance arrangements that each company has in place for other lines of business.

In the interests of simplicity and streamlining administration, the companies may have decided to have treaties such that the retention limit is the same for all types of business. This may result in the companies each over/under-insuring for particular lines of business if they were each considered in isolation on their own merits.

Company A might have other reinsurance treaties in place, such as excess of loss, stop loss and/or catastrophe treaties.

Company B might have been able to obtain much cheaper reinsurance rates.

- **Financial strength**

Company A has good financial strength and is able to withstand some degree of variation in claims experience. However, if Company B is weaker, this could be a factor leading to its lower retention limit.

Similarly Company B might be taking greater advantage of the use of reinsurance to reduce its solvency capital requirements or enable it to write more new business.

Company B might require financing reinsurance in order to support capital strain, and the reinsurer might require a lower retention in order to provide this.

- **Other factors**

Company A might have been more proactive in regularly reviewing its reinsurance arrangements than Company B. Company A might have had a similar reinsurance arrangement to that of Company B many years ago, but over time may have gradually increased its retention.

Company B might have closer relationships with the reinsurance company or might have more awareness of the financial benefits of reinsurance.

(10 Marks)

(vi)

- The major risk with the immediate annuity is longevity risk – in case of impaired life annuity it becomes more critical particularly in understanding and estimating the mortality/life expectancy deterioration/worsening related to different form of medical impairment and/or level of smoking.
- The above leads to risk of correctly estimating the extra annuity payment afforded by a particular medical condition or level of smoking.
- There may be a lack of available data on life expectancies relating to different forms of impairment/levels of smoking. This makes the pricing more difficult.
- If there are only relatively few cases with similar conditions then the company will not get the get benefit from averaging of experience for large homogenous groups.
- Another risk is of substantial increases in life expectancy brought about by improvements in treatments for key conditions underwritten in the enhanced annuity market.
- The policyholder could stop smoking or introduce other lifestyle changes, e.g. embark on a fitness regime which would increase his/her life expectancy. This could invalidate the pricing basis.
- There is a risk of non-disclosure, e.g. lying about smoking habits or about the seriousness of a particular condition.
- There is a risk of regulatory change, outlawing the use of differential annuity rates.
- There could be bad publicity in media/society, if this move is interpreted as encouraging smoking.

- The company has not sold this business before, and if not able to achieve the desired level of business, then the development costs may not be covered.

- Anti selection could occur if the definitions of impairment are weak, leading to relatively healthy people fitting into the impaired category, or if people smoking only a few cigarettes take out the policy as a smoker.

- There is also a possible anti-selection risk if the company also continues to offer standard annuities as it will have to allow for the increased longevity risk of those taking up standard annuities, which on average may now consist of healthier lives.

- However, this will depend on the extent to which the company is already exposed to some anti-selection in its normal annuities due to competitor companies already offering impaired life annuities.

- Also, if standard rates need to be re-priced due to the increased longevity risk of those taking up standard annuities, volumes of those taking out those standard annuities may drop if they find cheaper rates with companies who do not offer impaired life annuities. There is a risk that the company under-estimates the impact of this anti-selection on its normal annuities.

(6 Marks)

(vii)

Appointed Actuary/Valuations actuary must consider the various/relevant provisions of Insurance Act, 1938, IRDA Regulations, professional guidelines/Actuarial Practice Standard applicable to him/her in his role in determining the value of liabilities particularly the IRDA (Appointed Actuary) Regulations, 2000, ALSM Regulations, 2000, IRDA (Protection of Policyholder's interest) Regulations, 2002, IRDA (Distribution of Surplus) Regulations, 2002, APS-1, APS-2 and APS-7.

APS-7 advice to the Appointed Actuaries, Peer Reviewers and other Actuaries concerning the issues that must be considered in determining the level of MAD and also set the minimum margins that will generally be considered acceptable.

The Appointed/Valuation Actuary may first assess the best estimate assumptions and then add MADs. Alternatively, he/she may seek first to establish net of MAD assumptions or provide an overall contingency reserve for adverse deviations using professional judgment. Whichever approach is taken, the Actuary must be prepared to quantify and justify the overall MADs used in the valuation as providing an appropriate level of prudence to enhance the degree of protection of policyholder benefits, from the impact of adverse experience.

The Appointed/Valuation Actuary may:

- rely on the overall MADs rather than just the MAD that may have been associated with a particular parameter, but only to the extent that it can be held that the risk of coincident occurrence of adverse experience in several parameters is expected to have insignificant impact on the amount of the liability;
- have regard to the extent to which increases in liabilities may be offset by compensating increases in asset values;

- consider the ability of management to react to adverse experience, for instance by changing asset mix, reducing or eliminating bonuses (subject to maintenance of PRE), increase mortality and other charges where there is discretion to do so, or more extremely closing to new business with perhaps consequential reductions in expenses;

- consider the protection provided by reinsurance;

- consider the additional protection provided by the actual solvency margin held, only in the most extreme adverse scenarios, which should generally be highlighted to the Board as ones, which would require either further capital injections or the closure of the business after securing the interests of policyholders. In such extreme scenarios, only 10% of the free assets, if any, in the policyholders‟ participating fund can be assumed to provide the additional protection.

In constructing the adverse scenarios, the Actuary must:

- identify and give particular attention to the conditions or combinations of condition that will be the greatest threat to the security of policyholder interests;

- identify and consider the extent, to which falling or rising interest rates may threaten the ability of the office to secure policyholder interests and where such risks cannot be substantially matched or mitigated;
- consider more generally the interaction of liabilities and assets;
- consider all options, with a view to policyholders acting rationally to maximize their own interests, particularly where this may be to the detriment of shareholders or other classes of policyholders. For instance, if in an adverse scenario, interest rates fall below the levels underlying guaranteed annuity rate options, then while selecting the adverse scenarios, the Actuary must allow for the risk that a large proportion (commensurate with the actual experience of the company) of policyholders may exercise their options and then decide whether to provide for the additional reserve or not;

- avoid being influenced unduly, by personal opinion held appropriate concerning the future (of say mortality experience or interest rates), and ensure consideration of a full range of plausible adverse scenarios.

While setting MADs, the Actuary should consider the past experience of the company concerned.

While assessing the risks inherent in guarantees provided on long duration contracts and concerning the terms on which future premiums may be invested and investment income

reinvested, the Actuary must consider the relevant experience available from jurisdictions other than India. This should include consideration of both deflationary and inflationary scenarios.

The overall objective of setting MADs should be to enhance the protection provided to policyholder benefits.

(11 Marks)
[Total Marks-50]

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