Institute of Actuaries of India

Subject SA2 – Life Insurance

November 2023 Examination

INDICATIVE SOLUTION

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) Given the product is open to new business, the product needs to confirm the following key set of guidelines, regulations and circulars

- IRDAI non linked product regulation 2019
- IRDAI EoM regulations 2023 and IRDAI commission regulation 2023
- IRDA (Distribution of Surplus) Regulations 2002
- APS5
- Min surrender and paid up value regulation 2015

From a product design and structure point of view, the following requirements needs to be met

- The structure needs to be classified as participating product
- Under the par products, the bonus accruals during the term shall be as follows:
  - Regular bonus shall be declared only on an annual basis;
  - Interim bonus shall be declared at the annual valuation period, which shall become payable during the inter-valuation period.
  - Terminal bonus or other forms of bonus, if any, shall become payable on the specified events or at the end of the term of the policy.
- The company can allocate the valuation surplus to its shareholders equal to one-ninth of the surplus allocated to policyholders in case of life fund maintained for participating policyholders. In other words, one-ninth of the bonus allocated to policyholders can be shared with shareholder or the 90% of total valuation surplus in participating fund has to be with policyholders with 10% surplus distributed to shareholders only if 90% is allocated to policyholders.
- In case of par products, the maturity benefits shall closely reflect the asset share.
- Minimum policy term should be 5 years
- Other than single premium products, the premium paying term shall not be less than 5 years.

- **Minimum Death Benefit**:
  - For all the non-linked individual life insurance products, the minimum Sum Assured on death during the entire term of the policy shall not be less than 7 times the annualized premium, for limited or regular premium products, and 1.25 times the single premium for single premium products. Further, for other than single premium products, the minimum death benefit shall be at least 105% of the total premiums received upto the date of death.
  - For the participating products, in addition to the sum assured on death, the bonus and additional benefits as stated in the policy and accrued till the date of death shall become payable on death as part of the death benefit, if not paid earlier.
  - In case of death due to suicide within 12 months from the date of commencement of risk under the policy or from the date of revival of the policy, as applicable, the nominee or beneficiary of the policyholder shall be entitled to at least 80% of the total premiums paid till the date of death or the surrender value available as on the date of death whichever is higher, provided the policy is in force.
  - In case of fraud or misstatement or suppression of material fact, the policy shall be treated in accordance with the provisions of Section 45 of the Insurance Act, 1938.
  - For policies issued on minor's life, the date of commencement of risk may start anytime on or upto two years from the date of commencement of the policy or on the policy anniversary after attainment of majority, whichever is earlier.

- The provision of minimum death benefit shall not be applicable to reduced paid-up policies.

- **Acquisition of Surrender Value:**
  - All individual savings products, shall acquire, both, a guaranteed surrender value and special surrender value, if higher.
  - The minimum guaranteed surrender value shall be the sum of guaranteed surrender value and the surrender value of the any subsisting bonus and any guaranteed additions already attached to the policy.
  - **Other than single premium products**: The guaranteed surrender value shall be at least:
    - 30%, 35%, of the total premiums paid less any survival benefits already paid, if surrendered during the second and third year of the policy respectively,
    - 50% of the total premiums paid less any survival benefits already paid, if surrendered between the fourth year and seventh year of the policy, both inclusive.
    - 90% of the total premiums paid less any survival benefits already paid, if surrendered during the last two years of the policy.
  - **Single premium products:** The guaranteed surrender value shall be at least:
    - 75% of the total premiums paid less any survival benefits already paid, if surrendered any time within third policy year.
    - 90% of the total premiums paid less any survival benefits already paid, if surrendered in the fourth policy year.
    - 90% of the total premiums paid less any survival benefits already paid, if surrendered during the last two years of the policy.
  - Every such policy shall show the guaranteed surrender value of the policy at the close of each year after the second year of its currency or at the close of each period of three years throughout the currency of the policy in the policy document.
  - A policy which has acquired a surrender value shall not lapse by reason of the non-payment of further premiums but shall be kept in-force to the extent of the paid-up sum assured and the subsisting reversionary bonuses including guaranteed addition, if any. This provision is in accordance with the provisions of Regulation 3(b)(iii) of IRDAI (Acquisition of Surrender and Paid Up Values) Regulations, 2015.

- **Special Surrender Value:**

  The special surrender value shall represent the asset share in case of the par policies, where the asset share shall be determined in accordance with the guidance or practice standards issued by the Institute of Actuaries of India.

- **Premium:**
  - The premium chosen at the outset shall become payable throughout the premium paying term of the policy. Such premium shall be level or uniform and shall not vary over the term of the policy except as below:
  - After payment of premiums for first five completed policy years, the policyholder may be given an option to decrease the premium upto 50% of the original Annualized Premium, subject to the minimum premium limits under the product of the insurer. Once reduced, the premium cannot be subsequently increased. Benefits may be

revised subject to the minimum death benefit as stipulated under Regulation.

- **Grace Period** - The policy to allow Grace period of 15 days for monthly premium mode policies and 30 days for all other premium mode policies during which time the policy is considered to be inforce with the risk cover without any interruption, as per the terms & conditions of the policy.
- **Revival Period** should be of a period of five consecutive years from the date of first unpaid premium, during which period the policyholder is entitled to revive the policy which was discontinued due to the non-payment of premium.
- Commission, Remuneration and Expenses shall be as per the extant Commission and Remuneration Regulations, Expenses of Management of Insurers transacting Life Insurance Business Regulations.

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ii) Key reasons for declaring low bonus rate:

- The benefit illustration (BI) at the point of sale is only an illustration to the potential customer to see how his benefits will grow, given a set of fixed assumptions. This does not bind the insurer to give benefits equal to that shown in the BI if the fixed assumptions are not borne is reality.
- However the BI does set PRE for the customer, so insurers will try to be consistent with that shown in the BI, if not exactly equal.
- The 8% assumed in the BI is uniform for the whole tenure, the question mentions last year the yield was 8%. We don't know if previous year's it was lower or not.
- Also the company may assume a lower future expected yield than that earned in the current year while calculating the support bonus rate.
- The company intends to declare a smooth regular bonus rate and do not intend to change it frequently and hence, even if the earned rate is same as illustrated, it assumes a lower reasonable rate for future (basis locked-in yields) so as to not fluctuate bonus materially when returns are lower.
- The company could have taken a different approach to the RB and TB split in the illustration and now the practice might be different, as the uncertainty with respect to the future yields could be higher now. So the insurer wants to keep the RB lower (to keep it smooth) with a higher TB; so that eventual benefit to the customer is consistent with the BI.
- Company may calculate reversionary bonus rate by utilizing lower than 100% of asset share for reversionary bonus (say only 90% of asset share is used to determine the supportable regular bonus rate). The residual amount is used to manage fluctuations in the actual experience so as to give a smooth bonus and the residual asset share is paid as terminal bonus.
- The earned rate of 8% may be one off due to realized gains (either from equity or sale of bonds where realization led to higher earned rate than the actual yield of the fund) and hence, may not be supportable in future. Thus, the company, even though earned 8% believes it is not sustainable in future and hence, to manage PRE, would have declared a lower bonus rate.
- Interest rate is only one source of surplus, if lapse/surrender/paid up profits are shared, then actual experience being lower than what was assumed in pricing. If case, the methodology is not to share the discontinuance profits, then the impact will be minimal (only second order impact of per policy maintenance expenses)
- There could be difference in Pricing methodology of calculating bonus and the methodology of calculating bonus while declaration – pricing would have taken expenses higher than EOM,

lapse profits would have been assumed, CoG not deducted, tax not deducted etc. which may not the methodology of asset share calculation when declaring bonuses.
- Business mix difference – in case bonus rate determined during pricing was based on average of a particular business mix, it may be the case that the actual mix is materially different to what was assumed during pricing leading to non supportability of bonus
- Maintenance expenses higher than what was assumed in pricing. Need to know the reasons for higher maintenance expenses and what was not known during the time of pricing which led to different level of expenses than assumed in pricing
- Mortality experience different to what was assumed. This may not be material given mortality experience may not be material or credible
- Change in tax rate or change in rate of cost of guarantee from what was assumed during illustration stage
- Pricing may have been done aggressively – it was assumed during pricing knowingly that the asset share cannot support bonus what is being illustrated, but due to competitive pressures, illustrated bonus rates were high meaning maturity value shown is higher than asset shares. This could be due to company may have a significant FFA lying in the fund which the company may plan to use for supporting higher bonus for this product

Impact to various stakeholders

- The impact will be dependent on the following:
  - Market competition and market practice
  - What was communicated at the point of sale apart from illustration
  - Actual Market returns in the economy (Interest rates, equity returns)
  - Company's past practice

In case market practice is to declare bonus rates as illustrated at 8%, then this could bring dissonance among existing customers as well as challenge to sell this product by distributors. Thus, the impact will be both on existing customer and new customers.

The key stakeholders and impact on them could be:

- **Existing Customers:**
  - They will feel let down if the market actually experienced higher returns and the insurer did not give higher bonuses.
  - It depends how the insurer has communicated this news to them; if there is an assurance that the total return at the end of the policy will be consistent with the illustration. The existing customers will understand.
  - The existing customers will also observe what other insurers are doing. If others are paying higher return/bonuses than this company, there is a risk of higher lapses, surrenders or paid-ups
  - This will impact lapse/surrender or paid up of policies. Thus, it will have Impact on strain of bonus for future. Complaints increasing, can lead to litigation etc.

- **New Customers**
  - While a new customer will check the BI while buying they will also see the actual bonuses declared. If they are not aligned with what is shown in BI and what market is doing, there is chance new customers may not feel confident about this insurer.

- Thus, will be difficult to convince for buying, leading to stress on new business

- **Distributors**
  - If the rest of the insurers are giving higher bonuses; and this company is given lower; the distributors will be upset
  - They may prefer to shift to another company
  - However if the communication by the insurer is clear on why this lower bonus rate; then may be it will be useful tool for them to explain it to their prospective clients

- **Insurer**
  - The company needs to justify in the with profit committee (WPC) how the supportable bonus calculations are done and why the declared rate looks lower
  - The committee members including the independent actuary will expect an explanation, before approving the bonus declaration
  - In case of consistent declaring of lower bonusses than earned, this will have lower benefits to discontinuing policyholders (on death, surrender or paid up)

- **Regulator**
  - As long as all the governance is adhered to as per the regulations and can be demonstrated that PRE is met; the regulator will not intervene

- **Shareholders**
  - In the short run, lower bonus rate means lower shareholder transfer
  - However, if the bonus rate is appropriate as per the asset share calculations and it is based on actuarially sound principles; shareholders will be ok with the delay in distribution
  - The additional surplus which is not distributed can help in supporting solvency

- **Accounting and taxation**
  - If there is consistent under declaration of regular bonus rates and bonuses are being deferred or surplus being sitting in FFA, this may have impact of deferring of taxes in the par fun if tax is applied on allocated surplus to policyholder and shareholder.

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iii) Background:

The product is a group product. The difference between individual protection product and this product from mortality standpoint will be due to:

- Change in level of financial underwriting
- Change in level of proposal form information and health declaration
- Change in level of medical underwriting

The mortality assumption may vary based on the following factors

- **Type of loan**– secured or unsecured and loan tenure. Typically, secured loan are less risky and carries a lower loan interest rate compared to unsecured loan.

- **Purpose of loan** – home loan takers are safer compared to a personal loan taker; as there is an automatic self selection. Some in bad health is unlikely to buy a house. Also, the due diligence by the bank for the home loan is far more stringent than for personal loan (for white goods or a holiday)
- **Tenure** - smaller loan tenure may have lower due diligence compared to longer loan tenure
- **Type of bank** - which will determine the target segment of customer. Typically, the geographical presence of banks, the social and financial strata of customers the bank will attract such as Co-operative bank Vs a foreign bank
- **Amount of loan and loan interest rate charged**. This will again determine the target segment of the customer. High loan amount given may mean the credit assessment is done fully versus a smaller loan amount say, such as a micro credit loan. Similarly, within the a bank for the same type of loan and tenure etc, it may charge a higher interest rate to one customer compared to other depending upon the financial credit worthiness of the customer; which does affect the lifestyle and hence the mortality.
- **Mandatory or voluntary** - Whether scheme is mandatory for loan holders in which case the bank may pay the premium or the scheme is voluntary where customer may pay the premium. If it is mandatory there is a protection for insurer, as anti selection is eliminated. Also there is larger pool of loanees covered making the experience more stable
- **Amount of risk assessment done by the bank itself while giving loan.** Typically, it is not expected for the insurer to do any financial underwriting as the cover is upto the loan amount and the loan amount is granted by the bank basis the financial risk assessment
- **Period to opt insurance** - When can the customer opt for insurance, during the loan avail stage or a stipulated period post loan avail or anytime during the loan tenure. There can be a potential anti-selection if option is available at anytime.

All these factors are important from underwriting standpoint, and thus, mortality assumption setting standpoint as the product is a group product where underwriting will be limited compared to an individual product.

Further, need to check whether suicide clause will be applicable within first year as per regulations or whether need to be waived off. Also, need to see if waiting period can be added, though not allowed by Indian regulations

Apart from above factors, in order to determine mortality assumption, the company can look into

- **Past claim experience**

- if the bank has data about past claims and exposure details, then this can be a starting point.
- Note this needs to be bifurcated basis type of loan and year-wise experience as well.
- Experience needs to be looked at both from count and amount of claims basis.
- Experience also needs to be looked separately for COVID claims and non-COVID related death claims.
- Also, need the pattern of delay in claims reporting to adjust for IBNR in mortality assumption.
- Need to validate whether experience is still relevant. Is there any change in process of loan disbursement or selling or target segment.

- Need to also look into the claims rejected in past in case the scheme was insured previously and reasons for the same.

- **Industry experience and any past experience of similar schemes -** if the company has past experience of similar schemes, then the same used be used. However, appropriate adjustment such as recent effect, method of selling, target segment changes need to be allowed for. Alternatively, company may search for any published data of mortality for such kind of similar schemes.

- **Reinsurer's experience** - company may look for reinsuring the scheme. In such a case, the company may discuss with reinsurer on what mortality assumption has been used to determine RI rates. However, need to keep in mind that mortality experience may vary basis sum assured and in case the RI treaty is on surplus basis where the claims experience is different to that of retained basis, appropriate adjustment has to be done. In case on RI premium rates are provided, a judgment has to be taken how much in RI premium rates is loading for expenses, profits and cost of capital etc. to determine the proxy mortality assumption used by RI.

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iv) Background:

Single premium immediate annuity pay a series of payment to the annuitant as per defined frequency till the annuitant is alive in lieu of a single premium payment upfront at the start of the policy

Risks of offering loan and surrender value

- Typically, single premium immediate annuity is backed by fixed interest securities. Offering surrender poses a risk of realizing such assets at market value which may be lower at the time of surrender leading to a loss if not charged from the annuitant. This is especially true if market interest rates goes up and annuitant may find other alternate investments more lucrative than the annuity.
- In case of annuity for life, offering loan or surrender can be an anti-selection risk as the person who is about to die or in ill-health, surrendering the policy and being left with those who with lighter mortality than expected in pricing leading to annuity payments being longer than expected.
- Surrender may be offered to annuity with return of premium of death as there is still a principal amount to be refunded on death which can be taken at a lower value on surrender.
- In case the company do not have any past data or industry data on surrendering of annuitants, then it poses additional risk of determining the number of surrenders which can happen (surrender assumption) leading to pricing risk of inappropriately pricing the surrender rate assumption
- Similarly, in case, loan is provided and if loan value is higher than surrender value, then the additional risk is not able to recover the loan amount
- Further, if loan interest rate is such that it is lower than the annuity amount payable as percentage of single premium, then it will be beneficial for the annuitant to not repay the loan and continue to pay interest from the annuity amount received

- Similarly, if interest to be charged on loan is guaranteed, then, it poses anti-selection risk of annuitants taking loan if market interest rates are high or annuitants getting loan at costlier rate in market than in the policy.

Remedial actions to manage/mitigate risks

- Restrict offering loan and surrender only to annuity with return of premium.
- Restrict surrender of policy only in expectational circumstances, such as ill-health or terminally ill with evidence. This may be acceptable at it is not in hands of annuitant to surrender but based on an event, plus the ROP was anyways paid on death, which is now getting accelerated. Further, the probability of such instance is relatively low compared to giving unrestrictive option to annuitant to surrender at any time
- Loan amount should be limited to a certain percentage (say 80%) of the surrender value if there is no collateral other than the policy itself
- In case loan is offered, loan interest rate charged should be market linked and should be higher than the annuity amount payable as percentage of single premium.
- Surrender value guaranteed can be lower and a non guaranteed special surrender value can be provided which could be based on economic interest rate applicable to the time of surrender and or an MVA to be applied to recover the loss on sale of asset on surrender
- The surrender value offered should also allow for the fact the mortality for the residual annuitants will be lighter. Thus, an adjustment in surrender should be done for the same
- The surrender value should not be too attractive for someone to surrender proactively and it is in the money for the annuitant to surrender

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[45 Marks]

Solution 2:

i) General:

- Policy data that is inadequate, inaccurate and incomplete may lead to incorrect results in estimating liabilities and supervisory reporting.
- Actuaries who do the estimation of liabilities may not have direct control over the data that is input into the system
- Important for the insurer to build in necessary checks at the time of data entry so that the data captured is complete, correct, accurate and no missing elements.
- Actuary normally carries out certain validations, before estimation of liabilities, to appreciate the quality of the data, overall reasonability of the data and to account for the data problems, if exist.
- Actuary may require that all the data elements required are maintained and provide access to such data in a predefined format.
- Data validating systems need to have provisions to record all events as they occur in terms of in-force, exits, entry and to continual update over the years. These figures need to be reconciled every year to identify the errors.
- General validation for sensibility – all dates to be valid date
    - All amounts (like SA, premium) should be non-negative or non-zero
    - All parameters should be within the product boundary conditions:
        - Age of the policyholder within min max allowed by the product
        - Policy term, premium paying term and SA within the min max allowed by the product

- Premium calculation should be validated with the premium rate table of that product, including any large SA discount, modal discount, underwriting extra, etc.
- Policy anniversary, maturity date to be populated according to the DOC and the Policy term
- Impossible dates of birth or retirement ages or start dates.
- To identify data entry errors like ages beyond the limits of the product, for e.g., higher or lower ages, higher or lower sums assured
- Spot check may also be built for random checking with physical files.

(a) Unit linked Surgical illness product:

- For the purpose of arriving at unit reserve, insurer need to maintain information on the number of units split by each unit fund offered under the product.
- For the purpose of arriving at the non-unit reserve insurer need to maintain the information about: policy number, date of entry, date of birth, gender, risk premium, maturity date, amounts of surgical illness benefits, death benefit.
- Provisions to check with the relevant revenue account:
  - number of units allocated from the premiums by each fund, switches between unit funds,
  - number of units cancelled to switch the funds, to make partial withdrawals, to make benefit payments
  - number of units cancelled to levy charges
  - charges levied and the expenses involved consistent with the surplus emerging during the year.
  - NAV during the relevant on/off movements.

(b) With-participation product:

- Data reconciliation checks: Provisions for similar grouping of data by various factors, data comparison between two valuations like number of contracts, sum assured, premium, amount of bonuses already declared and attached to the policies.
- Data consistency checks could include calculating average sum assured, average premium, various ratios like sum assured to premium to be consistent with the previous year investigation.
- Movements data be checked against accounting data, in particular, benefit payments and bonuses attached.
- Provisions to investigate analysis of surplus and embedded value profit between one valuation date to another.

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ii) Uses of capital and free assets for the new insurer:

- Capital allows the insurer to meet its obligations including adverse experience and also meet the solvency requirements
- Insurer may aim at holding enough capital so that the solvency requirements are met comfortably to avoid regulatory intervention. For the insurer, as its CLSM is slightly more than the regulatory requirement, holding sufficient capital at all times, to avoid regulatory intervention, is important for the insurer.
- Having sufficient free assets enables insurer to write new business. However, writing new business may result in new business strain, as most of the product types that the insurer is expecting to market may need capital support.

- for with-profits business
    - – estimation of liability needs to include margin for adverse deviations (MAD), provisions for future discretionary bonuses and the cost of guarantees. In addition, the solvency requirements would add to the capital strain.
    - As insurer is planning to give bonuses from first year, it may not earn surplus during the initial years to declare bonuses. Hence, having sufficient capital is important for the insurer to declare bonuses.
    - If risky investment strategy is adopted, insurer may need to hold more capital.
    - In case of with participating products, free assets enable insurer to meet policyholders' reasonable expectations, by allowing smoothing of bonuses over time and by allowing risky investment strategy giving the investment freedom. However, given limited free assets, investment strategy needs to be prudently decided and it will have limited ability to smooth bonuses. This could be seen as going against policyholders' reasonable expectations (PRE). It may also make the with-participation products less attractive if the insurer offers poor returns when competitors may be smoothing payouts upwards.

- For long-term critical illness product, unit linked surgical illness product and term insurance product may require detailed medical underwriting resulting in higher acquisition costs leading to possible strain.
- MAD and other allowances may be released over time, but in the initial years limited free assets will be insufficient to support the expected new business growth.
- Hence, non-availability of such free capital on an ongoing basis could limit the new business volumes or limit the ability to do prudent underwriting

- Free assets help insurer to maintain investment freedom to maximize overall return, depending on the free assets available with the insurer. As insurer has limited free assets, insurer may have to match assets and liabilities closely and may not have an ability to take up risky investment strategy. Free assets provide insurer cushion to protect against adverse experience and a sufficiently higher level of free capital provides greater protection to meet adverse experience. For this insurer, free assets are limited and hence the ability to meet such adverse experience could be challenging, as any adverse event could reduce the free assets.
- It can help insurer to deal with adverse experience in the mortality a and morbidity risks
- Generally, unit linked products, may not require much capital, but as insurer is offering surgical illness benefit, there could be underwriting requirements which may increase the cost of the capital. Similarly, the capital requirements for term product may also be similar to unit linked surgical illness product, due to the possible underwriting requirements.
- Free assets also allow insurer to support strategic objectives like acquisition of another insurer or development of a new distribution channel, which the insurer may not be in a position to make use of.
- It is also required for day-to day operations i.e., internal working capital. Insurer require capital to support product development costs, establishing systems and marketing.

Capital is required for

1. New company – so all initial expenses of setting up, new distribution channel, training, IT system, prodt dev etc
2. Support in writing NB - different products req different level of capital (NB strain/ solvency requirements)
3. Reserve – prudent basis – so capital needed
4. Solvency margin – extra capital support
5. Investment freedom – crucial in some prodts (declaring high bonus; not important for risk prodts)

6. With profits – to declare bonus in the initial years (as surplus doesn't arise)
7. Underwriting cost – risk plans (Term plan; Illness plan)
8. Adverse experience (volatility) – dependence on reinsurance can be minimum; esp given term plan and illness plan

How Risk Based Capital may help insurer:

- Risk based capital is an internal assessment of the capital that the insurers are required to estimate by its assets in excess of liabilities.
- It is expected to reflect insurer's risk profile, risk appetite and ongoing business needs and is estimated using market value of assets and liabilities.
- Liability valuation may not include margin for adverse deviations and would be based on the best estimate.
- As CLSM is factor based, such factors may not necessarily reflect the risk profile of the insurer, hence, by moving towards RBC, insurer may reflect the inherent riskiness of the business and determine the solvency requirements. This may or may not reduce the solvency requirements.
- RBC may be useful, only if the factor-based solvency requirements result in higher solvency requirements.
- As insurers has no previous data for estimating the liabilities, insurer may be using other data, which may or may not be appropriate for the insurer. Hence, insurer may build suitably prudence to account for non-availability of its own data and the possible uncertainty.
- To that extent, it may or may not reduce the liability and the resultant RBC.

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iii)

(a) General Conditions:

- The primary objective of the investment strategy would be to meet all the obligations and having done that to maximise returns
- Choice of investment strategy will affect the returns to the policyholders and also the financial strength of the insurer.
- Asset types that may be considered to take in to account the statutory requirements (on what are all the allowed investments)
- Also investment market condition need to be considered, i.e. like avg return, security, marketability, liquidity, cost of transactions, term and currency.
- The investment strategy should also consider the liability profile in terms of duration of the liability, currency, nature of liability (fixed or inflation adjusted etc)
- Investment strategy should try to match the assets and liabilities by nature, term and currency
- Depending on the free assets, insurer can take the risk of mismatching assets, given its risk appetite
- In order to match the liability outgo, the components of the liability out go to be considered i.e., benefit payments, expense outgo and premium income
- Expense out go is generally linked to inflation and tend to increase over the during the term. Hence, the nature of this element could be similar to guaranteed in terms of price index
- For term it is generally common to use "discounted mean term"
- For matching purposes, identical discounted mean term of a liability and assets are used so that changes in interest rates would result similar movements across assets and liabilities.
- As the insurer is setting up business within the country, it is assumed that there is no currency risk involved and hence ignored

(b) With Participating products:

- Investment strategy should enable the insurer to meet the guaranteed benefits and policyholder's reasonably expectations under with participation products
- Identifying matching assets may be possible for guaranteed portion, subject to availability of assets for longer durations
- finding matching assets may be harder for discretionary benefits
    - to match the promises made and treating customer's fairly constraints like policyholders are informed that some of their premiums will be invested in equities and hence inflation protected
    - pace at which guarantees build up through regular bonuses and the split between regular and terminal bonuses
- The nature of the benefit payments under with participation product may be considered under guaranteed in money terms (which comprises of sum assured and accrued bonuses), discretionary (future bonuses at the discretion of the insurer
- For guaranteed benefits, it may be appropriate to invest in fixed interest securities like government securities or corporate bonds depending on the risk appetite and default risk with respect to corporate bonds
- For discretionary benefits, insurer may aim at investing in assets that produces highest expected return, as with-profits policyholders may want returns that are high in real terms and also dependent on the promises made by the insurer.
- Assets to match discretionary benefits could include equities meeting certain conditions like listing, dividend history etc or properties or high yielding fixed interest securities etc,
- Split of distributing bonuses between reversionary and terminal bonus also impacts the accrual of the guaranteed liabilities and the balance between discretionary and guaranteed benefits, which in turn may have bearing on bonus philosophy, level of free assets, risk appetite, PREs
- As free assets are relatively lower for the insurer, insurer may not be in a position to mismatch and hence would closely match the assets and liabilities, to the extent of available assets
- With respect to expenses which increase over time, insurer can match by investing in index-linked assets, if available and in equities as equities are expected to provide real returns

(c) Long term Critical Illness

- During the policy period, the benefits are guaranteed in lump sum or paid through annuities.
- For lump sum payment, as it is guaranteed in money terms, similar to with participation products, fixed interest securities may be suitable for matching the liabilities.
- There is a risk of how many will take lumpsum and how many annuity - will need to keep liquidity.
- Also better to assume all will take lumpsum; as annuity is at the then annuity rate; so no guarantee
- No guaranteed annuity rate - so no locking issue
- Appropriate to assume all will take lumpsum for prudence till credible experience is gained as annuity is at not guaranteed and is offered at the then annuity rate;
- As there are no guarantee with respect to annuities during policy term, investment strategy for annuities will have to be considered at the time of opting for annuities, considering the claim amount as consideration for annuity.

Once annuities are in payment, insurer may closely match the annuity payments similar to guaranteed benefits by investing in fixed-interest securities.

- If only life annuity is offered, the duration of the investments needs to consider the life expectancy of the annuitants. If other options are available, like return of capital, then the investments need to match fixed interest securities with matching income payments.
- If longer duration assets are not available, insurer may be subjected to annuity option risk.
- Due to regular annuity payment - more customer interactions; more expenses; but with electronic transfers and digital life certificates this may not be the case

[10]

iv)

- Current level of free assets and need to maintain the free assets beyond CLSM to avoid regulatory breach,
- risk products so are subject to highly volatile experience; as a new company don't want to subject to high volatality
- taking advantage of reinsurance terms, if they are cheaper
- unfamiliarity in underwriting the type of products proposed. Will get full underwriting support from reinsurer (with lower retention)
- reinsurance may be offering profit-sharing arrangement for lower retention limits
- planning to write higher volume of business with the support of reinsurance without using up the much capital and free assets
- to grow faster to gain critical masses and to experience quickly
- to maintain competitive rates by reinsuring most of the risks
- to limit the amounts payable on each claim to as low as possible, so as to reduce insurer's direct obligations
- to limit total claims pay-out on overall business
- to reduce insurance parameter risk in pricing, as the insurer is new to the business and has no prior experience
- to address claim pay-out fluctuations, all the products proposed, except with profits could result in huge claim pay-out, due to pure protection element in the initial years.
- to write higher risks or higher sums assured without taking much of the risks. To gain exposure and experience, to help increase retention later..

[Max 7]

v)

i) Using Reinsurance

- may increase the retention limits, if such limits are within the risk appetite of the insurer and are supported by sufficient free assets,
- If quota share is proposed, insurer may examine non-proportional reinsurance, as it helps in reducing volatility of claims experience, given the weak capital position, as claims volatility would be high initially due to the possible low volume of business.
- take stop loss cover to protect the portfolio and increase retention limits on individual claims to acceptable levels
- take underwriting support from reinsurers:
  - to strengthen underwriting
  - to limit claims fluctuations.
  - to establish underwriting process systems.

- May change product design parameters such as waiting periods, survival periods, but may impact new business if not competitive.
- Take technical assistance:
  - o for pricing term insurance, surgical illness charge, critical illness and annuity products, as insurer do not have relevant past experience to base its calculations.
  - o help with product design.
- For large sum assured or non-standard risks, facultative reinsurance can be used for some cases, if not available on treaty terms.
- the extent to which reinsurance can be used to reduce new business strain.
  - o Financing commission or profit commission would help improve the capital position.
  - o If allowed use financial reinsurance arrangements to improve the regulatory balance sheet
- Take reinsurance for annuity portfolio under critical illness product, to handle longevity risk
- If allowed original terms reinsurance may be considered as it allows sharing of all risks between the insurer and the reinsurer.
- Catastrophe cover to protect against large losses from a single event on the term product, if there is any group business

[Max 5]

ii) Using other possible risk management strategies, other than reinsurance, that the insurer can adopt to manage or mitigate the risks posed by increasing the retention limits beyond what was proposed in the reinsurance program

Manage expense control

- o reduce new business strain
- o bring in efficiency in operations by establishing appropriate administrative systems
- o put in place appropriate internal systems and controls for managing operational risk
- o set up suitable governance framework
- o reduce acquisition expenses like only online sales
- o outsource certain areas to third parties

- Maintain risk registers or risk databases to address all material risks that could pose threats to the capital.
- To address complaints, litigation, conduct risk and to limit unintended pay-out
  - o establish appropriate framework to deliver fair customer outcomes
  - o creating culture of treating fairly to customers across organisation, distribution channels
  - o communication and transparency to customers
  - o eliminate mis-selling
  - o encourage retention of customers
- Management of new business mix and volumes
- Review underwriting guidelines like imposing exclusions, if allowed.
- Review pricing basis and possibility of pricing upwards without being uncompetitive
- Revising product design like
  - o reducing guarantees offered under with participating products
  - o limiting the exposure i.e., sum assured may be offered that is viable
  - o eliminating cross subsidy across various groupings within the products by limiting the minimum premium or sum assured or age
  - o surgical illness benefits may be dropped from the unit linked and may offer plain unit linked insurance products with death benefit till such time experience is gained.
  - o Drop the option of life time annuity from the critical illness product to eliminate longevity risk in the initial years

  - Critical illness product may be offered for a shorter duration, as allowed by the regulations, with reviewable premium rates.
- launch products which are simple to administer, less capital intensive with acceptable risk level
- launch products that are successful for other companies
- To set up a “pay-out” or “mortality fluctuations reserve
- Simplify underwriting processes and bring in efficiencies by using data available in social platforms
- Review the target markets and the corresponding distribution channel
- Infuse more capital
- Create PREs carefully
- Change surplus distribution approach like
  - eligibility after certain period of time
  - defer distribution of bonus
  - more terminal bonus than reversionary bonus
  - Only terminal bonus, but may be uncompetitive

[Max 10]
[55 Marks]

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