INSTITUTE OF ACTUARIES OF INDIA

Subject SA2 – Life Insurance

May 2024 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) Insurer should have a documented policy for interest rate risk, determining its risk appetite; measure, monitor and control against the risk. The policy should include the classes and types of interest rate risk it will accept, limits on the amount of business offering interest rate guarantees that can be written etc. Possible Risk Management techniques available for the insurer to manage the interest rate risk include: [1]

Product Design:

1. Offer products under Unit Linked or Participating business to reduce the interest rate risk. Under unit linked format, the interest rate risk is significantly borne by the policyholder (unless there are investment related guarantees offered in the product). Similarly, in the participating design, the investment related risk is much lesser, as the investment guarantee offered is much lower and any variance in the investment experience gets shared in the 90:10 ratio between policyholders and shareholders. [1]

   However, if policyholders are purchasing non-participating products for their underlying long-term guarantees, these products may not meet their needs. [1/2]

2. Offering products that have lower accrual of interest rate related guarantees at the outset and defer the accruals of the guarantees to the later durations of the policy. [1/2]

   However, policyholders may not appreciate the accrual of guaranteed benefits at a later stage. [1/2]

3. The ALM implications of new products should be considered during the product design process to have reasonable assurance that sufficient assets will be available with the characteristics required for the new business. Offering lower PPT or single pay products. Offering policy terms not longer than available assets. Design income based products where income closely matches with coupon payments of bonds. [1]

   However, policyholders may not appreciate shorter PPT or single pay or income products if needs are different or competition is offering other types of products. Moreover, need to look at the profitability and expenses of such product design. [1/2]

4. In some cases, ALM considerations may lead to conclude that a product should not be offered or in some cases certain restrictions on the quantum of new business to be written could be imposed. [1]

Pricing:

5. In general, the interest rate risk is handled by adding extra buffers, while setting prices for insurance products to address potential changes in interest rates that could arise. [1/2]

   However, this method possibly may pose certain limitations as competition in the market affects the final prices being offered. [1/2]

Reserving:

6. Maintaining a separate pool of money, either as reserves or capital to protect against unexpected changes in interest rates, to ensure that the company stays financially strong. [1/2]

   However, this increases the capital requirements under the product. [1/2]

Asset Liability Management:

7. In addition to these methods, insurers can use Asset Liability Matching techniques which might include:

   a. Cash flow matching technique may be employed involving matching the timing and amount of cash flows from assets with the timing and amount of cash flows required to meet liabilities. [1]

      Cash flow matching can be more complex and might not be achievable due to limited supply of matching assets and can involve cost. [1/2]

   b. Duration matching can also be considered match the duration of assets with the duration of liabilities. By matching durations, the objective is to ensure that the sensitivity of the asset portfolio to interest rate changes closely aligns with the sensitivity of the liabilities. [1/2]

      Duration matching might not be achievable due to limited supply of duration matching assets and can involve cost. Further, duration matching doesn't allow for the mismatch in the volume of assets and liabilities. [1/2]

   c. Dollar Duration could be considered wherein, instead of focusing solely on the interest rate sensitivity, this approach considers the financial impact of interest rate changes on the entire cash flow stream. [1]

8. Asset Classes: To achieve Duration / Dollar Duration or Cashflow matching, insurance companies can use various tools. These include long-term investments, zero coupon bonds, and derivatives like IRS, IRF, and FRA. These tools allow them to lock in interest rates or protect against adverse movements in interest rates. [1]

9. Setting limits: Risk limits should be set to provide effective control of management of ALM risks. Risk limits should be set for the metrics including, but not limited to, the following:

   a. Solvency ratio
   b. Liquidity ratio
   c. Exposure to bonds of different ratings in the fixed income portfolio
   d. Concentration to a single issuer, promoter group or industry
   e. Credit rating of the reinsurer partners
   f. Exposure to single counterparty bank under derivative arrangements

   [2]
   [Max 6]

ii)

a) Impact of Change in Interest Rates on Balance Sheet:

Valuation of Assets:

1. The methodology of valuation of assets of a life insurance company is determined by the IRDAI (Preparation of Financial Statements and Auditor's report of Insurance Companies) Regulation 2002. In March 2024, this regulation got repealed and incorporated in IRDAI (Actuarial, Finance and Investment Functions of Insurers) Regulations, 2024.

2. Debt securities, including government securities and redeemable preference shares, shall be considered as "held to maturity" securities and shall be measured at historical cost subject to amortisation. As a result, any change in the interest rates in the economy should not impact the valuation of debt securities in the Balance Sheet.

3. Valuation of asset classes such as Real Estate, Listed Equity demonstrate no direct dependency on interest rates. Their values are primarily influenced by factors such as market demand, economic growth prospects, and industry-specific dynamics.

4. Bond Derivatives (traded in active markets) are valued at fair value in the Balance Sheet. When interest rates increase, the value of derivative assets tends to decrease thereby diminishing the total asset value reflected on the balance sheet and vice versa.

5. Unrealised gains/ losses arising due to changes in the fair value of derivative instruments shall be taken to equity under the head 'Fair Value Change Account". The 'Profit on sale of investments' or 'Loss on sale of investments', as the case may be, shall include accumulated changes in the fair value previously recognised in equity under the heading "Fair Value Change Account' in respect of a particular security and being recycled to the relevant Revenue Account or Profit and Loss Account on actual sale of that listed security.

6. The assets (including debt) backing the linked fund are valued on market value in the Balance Sheet. Any change in interest rates impact the linked fund value through change in the NAV.

(1 mark for each of the points correctly identified with reasons, max 5 marks)

Valuation of Liabilities:

1. A significant portion of liabilities on the balance sheet comprises policyholder reserves. These reserves are calculated by discounting future net cashflows using a predetermined Valuation Interest Rate (VIR).

2. The methodology to determine the policyholder reserves is specified in the IRDAI (Assets, Liabilities, and Solvency Margin of Life Insurance Business) Regulations, 2016. In March 2024, this regulation got repealed and incorporated in IRDAI (Actuarial, Finance and Investment Functions of Insurers) Regulations, 2024.

3. The determination of VIR involves prudent assessment of the yields from existing assets attributable to blocks of life insurance business, and the yields which the insurer is expected to obtain from the sums to be invested in the future.

4. Therefore, changes in interest rates can significantly impact the estimation of portfolio yield, particularly concerning investments involving new cash inflows in the form of renewal premium of existing book and coupons or maturity proceeds of the existing investments.

5. However, if new capital inflows (i.e. cashflows from existing assets or future premiums from existing contracts) are backed by derivatives where yield is locked, the impact of change in interest rates is further limited to second order reinvestment of cash flows from such FRAs.

6. The prudence in the form of MAD, is derived from guidelines issued by IAI in APS 7. The APS7 states that the MAD on interest rate should be derived basis minimum scenario of 10% and 20% reduction on the prevailing 10-year G Sec yields.

7. To conclude, the policyholder reserves are exposed to changes in interest rates due to the linkage of Portfolio yield and MAD on portfolio yield calculation to fluctuations in market interest rates.

8. The unit reserves of the linked portfolio will move in tandem with the changes in assets. Any change in interest rates impacts the linked fund value, the reserves will get adjusted by same amount. However, there shall be second order impacts on the non-unit liabilities as well.

(Max 5 marks for identifying the impact of interest rate changes on VIR through MAD and new money investments)

[Max 10]

b) The IEV represents the present value of shareholders' interests in the earnings distributable from assets allocated to the covered business after sufficient allowance for the aggregate risks in the covered business. The IEV consists of the following components:

- The free surplus allocated to the covered business.
- The required capital identified to support the business; and
- The value of in-force covered business ("VIF").

Changes in interest rates can affect the Indian Embedded Value (IEV) by influencing various factors:

- Impact on Company Assets: When interest rates change, it can affect the overall market value of the company's assets, primarily the debt and derivative instruments.
- Impact on Liabilities: Changes in interest rates can also affect the best estimate liabilities of the Company.
- Impact on Investment Income: A change in interest rates can affect how much money the company makes from its investments in the future. However, this impact is balanced out by changes in the discount rate used to calculate the present value of future profits.
- Reserving and Capital Requirements: Changes in interest rates can affect how much money the company needs to set aside for reserves and capital. However, these changes are largely offset by adjustments in the company's Free Surplus, resulting in limited impact on the EV.
- Impact on CRNHR
- Impact on TVFOG
- Impact on Frictional Cost.

(2 mark for identifying the reason at a high level)

<u>Impact on Company's Assets</u>

When interest rates change, it causes the market value of certain assets like debt and bond derivatives (like IRF, IFS, or FRA) to also change. How much these assets change in value depends on something called modified duration. With an increase in interest rates, the value of assets go down and vice versa. The increase in valuation of assets results in an increase in EV and vice versa.

However, not all types of assets are affected by changes in interest rates. Assets like equity and property demonstrate no direct dependency on interest rates. Their values are primarily influenced by factors such as market demand, economic growth prospects, and industry-specific dynamics.

(1 mark for identifying the impact on different assets classes)

<u>Impact on Best estimate Liabilities</u>

If interest rates go up, the BEL is likely to decrease, and if interest rates go down, the BEL is likely to increase. The magnitude of such changes in value depends on the modified duration of liabilities. When the BEL increases, the Embedded Value (EV) goes down, and when the BEL decreases, the EV goes up.

(1 mark for identifying the impact on BEL)

<u>Investment Income and Discount Rate</u>

Investment Returns: Insurance companies invest assets backing reserves, to generate investment income. Higher interest rates generally lead to higher returns on fixed-income investments, positively impacting investment income and consequently boosting EV.

Discount Rate: Interest rates directly affect the discount rate used to calculate the present value of future cash flows. When interest rates rise, the discount rate increases, leading to a lower present value of future profits and potentially reducing the EV.

The net impact of the above two points negates each other resulting in no impact on the overall EV of the Company.

(2.5 marks for identifying the net impact)

Impact on Reserving and Capital Requirements

The change in interest rates also impact the reserving requirement of the Company through changes in the Valuation Interest Rate. This change in Reserves further impacts on the Required Capital of the Company, as the capital is calculated using a factor-based approach prescribed in ARA regulations (in March 2024, this regulation got repealed and incorporated in IRDAI (Actuarial, Finance and Investment Functions of Insurers) Regulations, 2024).

The change in Reserves doesn't have any impact on the IEV of the Company as the Change in reserves gets negated by the Change in the Free Surplus. Similarly, the release pattern of the change in reserves has no implications on the EV because the discount rate and the investment return assumption is same as risk free rate (as discussed in detail in points above).

However, the change in Required Capital has a second order impact on the EV through impacts on Frictional Costs. Effectively, an increase in interest rates results in a reduction in reserves and required capital, resulting in lower frictional cost and hence higher EV.

(1 mark each for impact on reserves and required capital and 0.5 mark for identifying the net impact)

Impact on CRNHR

An allowance should be made for the cost of residual non-hedgeable risk not already allowed for in the time value of options and guarantees or the PVFP. This allowance should include the impact of non-hedgeable non-financial risks and non-hedgeable financial risks. As interest rates are assumed to be hedgeable, the Company doesn't calculate the CRNHR for this risk.

However, for all other risks, the Cost of Capital approach is generally used for calculating the CRNHR, in which case, the cost of holding additional capital under 99.5 percentile scenario is discounted using the risk-free rate. Any change in interest rate would impact on the CRNHR due to discounting change.

(2 mark for identifying the impact on CRNHR)

Impact on TVFOG

Another component of EV is TVFOG, which is a measure of how likely the investment guarantees and options are expected to bite under numerous interest rate scenarios. The TVFOG valuation not only is dependent on the current interest rate position but also relies on how uncertain future economic situations are.

If these scenarios are more unpredictable, then more TVOG is subtracted from the EV. Similarly, the lower the current interest rates, the more likely the guarantees and options are expected to bite, resulting in lower EV.

(2 mark for identifying the impact on TVFOG)

Impact on Frictional Cost

Frictional costs should be applied to the required capital. Frictional costs should reflect the taxation and investment costs on the assets backing the required capital.

Barring the impact on discounting of future taxation and investment costs, with a change in interest rate assumption, the investment income on required capital will change and accordingly the tax charge. Resulting in net reduction in EV under higher interest rate scenarios.

(2 mark for identifying the impact on FC)

[Max 15]

iii) The factors to be considered when adjusting the pricing of current non-participating savings contracts in response to fluctuations in interest rates are:

1. Policyholder benefits: These products compete directly with other investment options available in the market and hence will be subjected to competitive pressures from within the industry and from similar investment vehicles. Impact of such competition need to be considered on the existing policies in terms of surrenders/lapses as well as on the new business. [1]

2. Factors that directly and indirectly impact the profitability of insurance companies to interest rate movements are:

    a. External economic environment and future expected expectations of interest rate changes including inflation. [1/2]
    b. Current asset categories underlying non-participating fund and future investment opportunities in terms of market risk and reinvestment risk. [1/2]
    c. Current interest rate offered and whether such rates are in line with the future expected experience. [1/2]
    d. Sensitivity of benefits to the policyholders holding non-participating saving products to fluctuations in market interest rates. [1/2]
    e. Sensitivity of liabilities with respect to the non-participating saving products to fluctuations in market interest rates and its impact on the:
        i. solvency requirements, [1/2]
        ii. overall capital management [1/2]
        iii. cost of capital. [1/2]

3. Product Design: With movement in the interest rates in the economy, there are certain product features such as interest rate options, guarantees including surrender value, which gets very favorable/unfavorable and hence such features demand changes to complement the prevailing interest rates. [1]

4. Need for innovation in product design: Sometimes, innovation in the design of the insurance product differentiates it from the similar products in the market and gives the edge towards the marketability even after offering lower returns. [1]

5. Shareholder Returns: Profitability matrices such as Shareholder Internal Rate of Return (SH IRR) and New Business Margins (NBM) and the impact on these parameters. [1/2]

6. With an increase in interest rates, insurers anticipate higher expected profits unless they opt not to adjust contract premiums. However, market pressures often lead insurers to consider reducing prices to maintain sales volumes. Conversely, in scenarios of declining interest rates, the company's profitability may take a hit, resulting in decreased SH IRR and New Business Margins. [1]

7. Investment options and pricing: The pricing adjustment also gets determined by the availability of investment options in the market and the corresponding pricing. The availability of hedging tools like FRS, IRS and IRF and their relative prices under volatile interest rate movements also determines the pricing adjustments. [1]

8. For listed insurance companies, future new business at reduced margins can significantly impact on the company's valuation resulting in creating an overall perception on the profitability and may lead to reduced new business. Hence, possibility of reduced volumes and its impact on other assumptions to be considered. [1]

9. Existence of any Internal pressure from management to enhance profitability matrices, leading to increased prices. [1/2]

10. The reporting of NBM or any profitability metric typically doesn't occur based on prevailing yield curves daily. Instead, it's commonly reported using the start or end-of-quarter yield curves. Thus, changes in interest rates may not immediately be reflected in management dashboards or investor reports. [1/2]

[Max 8]

iv) Following are the regulatory requirements applicable in respect of the unit-linked product with guarantees:

1. The methodology to determine the policyholder reserves is specified in the IRDAI (Assets, Liabilities, and Solvency Margin of Life Insurance Business) Regulations, 2016. In March 2024, this regulation got repealed and incorporated in IRDAI (Actuarial, Finance and Investment Functions of Insurers) Regulations, 2024.

2. As per the regulations, the insurer must create reserves for unit linked business in two parts, unit reserves and general (non-unit) fund reserves.

    a. The unit reserves need to be calculated for the units allocated to the policies in force at the valuation date, using the then applicable unit values.
    b. The general (non-unit) reserves must be calculated using the discounted cash flow method, consider all the future cash flows like premiums, expenses and commission outgoes, benefit outgoes etc.
    c. In projecting the future cash-flows, any applicable guarantees (e.g. the highest unit-price at maturity) need to be considered. Similarly, any non-negative residual additions applicable to the unit-linked business should also be considered.
    d. The assumptions used in the projection of cash-flows to calculate the non-unit reserves should be based on best estimate and reflect appropriate level of margins for adverse deviations (MADs) that are set based on the professional guidance provided in this regard.
    e. Any future negative net cash-flows need to be provided for and any negative non-unit reserves at the valuation date should be eliminated.

3. Given the underlying guarantee on the unit prices at maturity, insurers are required to hold additional reserves at an aggregative level to reflect the possibility of any future additional strains arising (as stated in regulations as well, refer point 2(c) above). Although the regulations do not prescribe the methodology, the Appointed Actuaries are expected to follow the guidance note viz GN22 provided in this respect by the Institute of Actuaries of India.

4. This guidance note recommends the use of stochastic models where appropriate to quantify reserves required to finance possible shortfalls in respect of guarantees. The Actuary may however make use of alternative methods, including deterministic methods, to quantify this liability, provided such models or methods are based on sound actuarial principles.

5. It is assumed in all cases, that the liability may be split into the base assets backing the policy, viz. the unit fund, which are expected to be paid out at maturity, and an embedded derivative that acts as a floor to the payout on maturity.

6. The recommended method is to estimate the market consistent or fair value of the embedded derivative, i.e. that value at which it would be traded in an arms' length transaction between willing counterparties.

7. Asset models, also called Economic Scenario Generators (ESGs), should be employed to quantify reserves, particularly for guaranteed minimum values. Actuaries have flexibility in selecting stochastic investment return projection models, emphasizing proper calibration, especially in volatility and asset class correlations. Market-consistent values of embedded derivatives should justify assumed risk-free rates and volatilities, often using government securities yields.

8. Stochastic models must reflect appropriate variability and cover all material asset classes, calibrated based on market values like equity and swaption implied volatilities. Volatility assumptions rely on recent data, resorting to expert opinion if necessary. Actuaries determine iteration numbers for future scenarios, focusing on tail distribution calibration for accurate liability calculation and justifying chosen stochastic models and calibrations.

9. Liability models: In modelling non-economic factors such as lapses the Actuary should consider likely future policyholder behaviour and the extent to which this is correlated with the value of the guarantee. Thus, in certain adverse scenarios where the guarantee becomes valuable lapse rates should be appropriately chosen, having regard to the prudence required in a statutory valuation.

10. For policies with minimum guarantees, base asset values are assessed, excluding assets for embedded derivatives, on the valuation date. Future premiums and simulated investment returns, considering charges and taxes, determine projected values, accounting for bonuses, mortality, and persistency estimates. Values are compared to minimum guarantees; shortfalls are recorded. Shortfalls at maturity or surrender are discounted to quantify reserves.

11. After projecting policies onto one set of simulations, above step is iterated for each simulation, yielding a series of reserves matching the simulation count. The average of these reserves represents the expected cost of guarantees. This reserve is a constituent of mathematical reserves mandated by Regulations, particularly under point 2(c) above.

(1 mark for each point – Max 10 Marks)

[Max 49]

Solution 2:

i) When developing, designing, and pricing life insurance products, it's imperative to adhere to a set of guiding principles to ensure the best interests of both the insurer and the policyholder are met.

These principles serve as foundational pillars, shaping the integrity, fairness, and viability of the products offered.

1. Evolving risk coverage needs of the customer:

   Insurance products should adapt to meet the changing needs of customers over time. This involves not only developing new products but also revising existing ones to ensure they remain relevant and effective in addressing emerging risks.

2. Covering insurable risks with underlying risk transfer:

   Life insurance products should provide coverage for risks that are insurable and can be transferred from the policyholder to the insurer. This ensures that policyholders are protected financially against unforeseen events such as death or disability.

3. Simplicity and clarity:

   Complexity in insurance products can lead to confusion and misunderstanding among policyholders. Therefore, it's crucial to design products that are easy to understand, with transparent terms, conditions, and coverage details.

4. Transparency and clarity in wordings:

   Ambiguity in policy wordings can lead to disputes and dissatisfaction. Clear and transparent language should be used in all aspects of the product, including terms, coverage, exclusions, and conditions, to ensure policyholders fully understand their rights and obligations.

5. Protection of policyholder's interests:

   The interests of policyholders should be paramount throughout the product development and pricing process. This involves ensuring fairness, transparency, and adequate protection against risks.

6. Consideration of all relevant risks in pricing:

   Pricing of insurance products should reflect the inherent risks associated with providing coverage. All relevant risks should be appropriately assessed and factored into the premium rates to ensure the insurer remains financially viable.

7. Fair and reasonable premium rates:

   Premium rates should be set at a level that is fair, not excessive, inadequate, or unfairly discriminatory. Policyholders should receive value for money in exchange for their premiums.

8. Consideration of relevant factors in pricing:

   Various factors such as risk appetite, capital availability, claim experience, reinsurance costs, guarantees, and options should be considered when determining premium rates to ensure the long-term sustainability of the product.

9. Viability and self-sustainability:

   Insurance products should be designed to be economically viable and self-sustainable over the long term. This involves careful consideration of factors such as expenses, claims experience, and investment returns.

10. Appropriate market conduct practices:

    Fair and ethical market conduct practices should be upheld throughout the product lifecycle, including sales, marketing, underwriting, and claims management, to ensure the integrity and reputation of the insurance industry.

11. Implementation of relevant systems and procedures:

    Effective systems and procedures, such as underwriting, pricing, reinsurance, and claims management, should be in place to support the product and ensure efficient and reliable service delivery to policyholders.

(1 mark for giving each of the possible reasons. Max 8)

ii) The question doesn't specifically mention whether the guaranteed surrender value factors increased in absolute terms or are proposed to increase principally say by aligning the surrender

values with notional/actual asset share. Further, the question doesn't specify whether the changes are proposed for the future new business only or applicable to the existing policies as well. [1]

It is important to note that generally the changes proposed by the regulator are applicable prospectively and doesn't impact the existing policies as it may have significant impact on the insurance companies in terms of their profitability (because the existing policies are priced considering the prevailing guaranteed surrender value factors, further cost of informing the existing policyholders and the policyholder behavior after knowing that change). [1]

1. If the insurer can't increase the premium mid-term of the policy, with an increase in guaranteed surrender value (GSV) rates:

    a. Exiting policyholders stand to benefit by receiving higher surrender values.
    b. There may not be any impact for continuing policyholder either in terms of death benefit or maturity benefit.

2. Insurer might choose to increase the premium of the entire product, to adjust for higher surrender values, resulting in increased cost of purchasing such policies in the future.

3. There exists a trade-off between policyholders who choose to exit their policies early and those who remain until maturity. The benefits accrued by exiting policyholders through higher surrender values may come at the expense of increased premiums for the entire cohort or reduced shareholder profitability.

4. Insurer could decide to absorb the increased costs associated with higher surrender values by allowing / adjusting the higher costs (cost of capital and solvency margin) in other products, possibly leading to increased premiums for other products.

5. If the proposed guaranteed surrender values are prohibitively higher, insurer may not find the product viable and hence could withdraw such products from the market, resulting in non-availability of such products for the policyholders for future purchase.

6. Policyholders may be attracted to these products with the improved liquidity through higher guaranteed surrender values possibly leading to a very competitive product amongst all financial products, as it may not provide liquidity, protection, and savings under one single product.

Participating Policyholders:

7. Alignment with Asset Share:

    In the participating business model, policyholders typically receive values close to the asset share, though not always identical. With the increase in GSV factors, policyholders stand to benefit, especially if the asset share is lower than the guaranteed surrender value (primarily in initial policy years). This means that policyholders can potentially realize a higher surrender value than originally anticipated.

    In scenarios where the guaranteed surrender value was already lower than the asset share, insurers generally offer a special surrender value (SSV) or Terminal Bonus to bridge the gap and bring the surrender value closer to the asset share. Therefore, the increase in GSV factors in this scenario would have limited impact on the policyholders.

8. Impact on Par Policyholder Returns:

    Any excess payment made over and above the asset share due to the increase in GSV factors might result in continuing policyholders bearing the losses, because any losses within the cohort

due to experience variances are charged to the Asset Share of the continuing policies. Consequently, the internal rate of return (IRR) for maturing policyholders could be lower than expected.

[1 mark for each point. Max 7 marks]

iii) Possible risks to life insurers if the draft proposal is implemented:

1. Impact would be more on non-participating products when compared to participating products.

2. If insurance companies choose not to adjust contract prices accordingly, there will be lower profit margins.

3. This diminishes the buffer available to absorb losses in case of variance in actual experience, exposing the company to financial strain.

4. If insurance companies increase contract prices to accommodate the strain on surrenders, it could adversely affect the internal rate of return (IRR) for maturing policyholders.

5. This could make insurance contracts less attractive compared to other investment opportunities in the market, potentially leading to decreased demand.

6. Competition may limit the flexibility available to the insurer to adjust the premiums for future sales.

7. Regulatory requirements regarding price adjustments may also limit the scope of increasing the premium for future sales.

8. Either way, the Company's future profitability is expected to be impacted due to this either in the form of lower business or same volume of business but will lower profitability.

9. This would subsequently impact on the share prices of the insurance companies as the investors might react strongly to this proposed change.

10. Insurance companies would need to ensure that their ALM strategy reflects the revised experience and not just past trends.

11. Failure to make these adjustments in the ALM could expose the company to liquidity or reinvestment risks.

12. Though by guaranteeing higher surrender values, the policyholders would gain confidence in the insurance products and find it attractive, and hence may have higher new business.

13. Insurance companies may face an increased risk of higher surrenders especially under interest rate up scenario.

14. Policyholders may see an opportunity to withdraw and purchase new insurance contracts with potentially better terms.

15. Regulatory requirements may necessitate higher reserving to ensure that reserves remain at least as high as the surrender value at any given point in time.

16. This adds to the financial burden on insurance companies and affects their capital management strategies.

17. May also lead to higher solvency margin requirements.

18. Surrender values are often influenced by mortality assumptions.

19. An increase in surrender values may indicate that policyholders are surrendering their policies due to changes in health or life circumstances.

20. This could result in adverse selection, where healthier policyholders are more likely to surrender their policies, leading to increased mortality risk for the remaining policyholders.

21. If the proposal is implemented on existing policyholders as well, then communication to existing policies is a challenge including addendums etc.. Further, it can also impact mass surrender in existing policies.

22. Risk of change in systems for all products and system readiness. Also, business disruption for a shorter period of 6-12 months.

(1/2 mark for each of the main risks correctly identified and discussed, Maximum 12 marks)

iv) Following are the product design features allowed as per the regulation:

1. Unit linked insurance products shall operate by offering one or more segregated funds, wherein each segregated fund shall have well defined asset categorization along with its risk profile.

2. The premiums, net of allocation charges, if any, shall be utilized to allocate units in the segregated funds chosen by the policyholder at its NAV.

3. A Unit linked insurance policy shall offer one of the following death or health benefits:
   - the sum assured as agreed in the policy plus the balance in the unit fund.
   - the sum assured as agreed in the policy or the balance in the unit fund whichever is higher.

4. Unit linked insurance products may have an investment guarantee. Such a guarantee shall be reasonable and consistent in relation to the current and long-term interest rate scenario and shall be priced appropriately. Any guarantee offered in the benefits under a unit linked insurance product shall be at the product level only and shall not be related to any of the underlying funds.

5. NAV shall be determined for each of the segregated funds daily, based on the performance of the underlying assets of such segregated funds. NAV shall be used for the computation of benefits under the policy.

6. The NAV of each segregated fund shall be computed as:

   (Market value of investment held by the fund + value of current assets – value of current liabilities and provisions, if any)

7. Provisions shall include expenses for brokerage and transaction cost, NPA, fund management charges (FMC) and any other charges, as specified.

8. Insurers shall explicitly specify charges, as applicable, subject to the following conditions:

   - use uniform definitions for charges under all the unit linked insurance products in accordance with these regulations.
   - Except for single premium products, the overall charges in all other unit linked insurance products shall be distributed evenly during the lock-in period such that the:
   - The charges levied under the unit linked insurance products shall be:
     - Premium allocation charge.

- Fund management charge (FMC)
- Guarantee charge:
- Policy administration charge: This charge shall represent the expenses other than those covered by premium allocation charges and the fund management charge. This is a charge which may be expressed as a fixed amount or a percentage of the premium or a percentage of sum assured.
- Surrender charge or discontinuance charge.
- Switching charge: This is a charge levied on switching from one segregated fund to another available within the product.
- Mortality or morbidity charge: This is the cost of life or health insurance cover.
- Rider charge or rider premium.
- Partial withdrawal charge: This is a charge levied on the unit fund at the time of partial withdrawal of the fund during the contract period.
- Miscellaneous charge: This is a charge levied for any alterations within the contract, such as, increase in sum assured, premium redirection, change in policy term etc.
- Other conditions on charges:

9. Before launch of a product, insurers shall ensure the reduction in yield i.e. difference between gross and net yield, for policies, does not exceed the limits mentioned in the table below:

10. Discontinued policy fund: Each insurer shall have three separate discontinued policy funds: one for all pension products, one for all life insurance products and one for all health insurance products. Each of these funds shall comprise of all the discontinued policy funds of all the policies offered under the respective unit linked insurance products. Only fund management charges shall be applicable on such funds.

11. Minimum guaranteed interest rate:

    a. The minimum guaranteed interest rate applicable to the discontinued fund shall be specified by the Competent Authority from time to time.
    b. The excess income earned in the discontinued fund over and above the minimum guaranteed interest rate shall also be apportioned to the discontinued policy fund in arriving at the proceeds of the discontinued policies and shall not be made available to the shareholders.

12. The maturity benefit shall be at least equal to the balance in the unit fund value available on the date of maturity.

(1 mark for each design feature, Max 8 marks)

v)

1. In India, life insurance companies are subject to taxation under the Income Tax Act, 1961. The taxation of life insurance companies involves several provisions and sections of the Income Tax Act. Here's an overview of the relevant sections and how they apply:

2. Section 44 - This section deals with the computation of profits and gains of the insurance business. Life insurance companies compute their taxable income based on the provisions outlined in this section.

3. Section 115B - Though the general corporate tax rate for the domestic companies is 25% plus applicable surcharge and cess, the tax rate specified in Section 115B of the Income Tax Act, 1961, for life insurance companies was 12.50% of the total income.

4. Section 10(23) AAB: This section provides an exemption for income earned by certain entities engaged in infrastructure debt funds, pension funds, or such other funds or institutions as may be notified by the Central Government.

5. Other relevant sections are Section 115O, 10(34) and 80(M) which are related to the taxation of Dividends and exemptions allowed as per the Income Tax Act of 1961.

(1 mark for giving reference of each relevant section of the Act. Max 5 marks)

vi)

a) Impact on the Balance Sheet:

1. Assets: Life insurance companies typically hold significant investments in various instruments such as equities, bonds, and real estate. The direct tax rate of the insurance company doesn't have any implications on the valuation of assets held and hence their valuation remains unaffected. However, an increase in the tax rate would reduce the after-tax returns from these investments, potentially lowering the overall value of the investment portfolio year-on-year on the balance sheet.

2. Policyholder Reserves: With the increase in the tax rate, the amount set aside for policyholder reserves will not be adjusted to account for the higher tax liability. The policyholder reserves are the provisions held for the future payout to the policyholders only and don't account for the Direct tax liability of the insurance company. However, for participating business, the policyholder reserve, does include the future shareholder transfers and corresponding tax payouts. That said, any change in the tax rates has minimal or no impact on overall reserves.

3. Shareholder Equity: The change in tax rate would impact on the net income of the company, which in turn affects retained earnings. With higher taxes, net income would decrease, leading to a reduction in retained earnings on the equity side of the balance sheet.

4. Fair Value Change Account: This account includes the revaluation reserve or unrealised gains/losses on Equity or Derivatives. These revaluation reserves or gains /losses are shown gross of tax and hence not impacted by change in direct tax rate.

5. Considering the impacts on assets and liabilities as discussed above, the overall assets and liabilities position is expected to go down with an increase in the direct tax rate.

(1 mark for each relevant impact. Max 5 marks)

b) Impact on the IEV of the Company

The IEV represents the present value of shareholders' interests in the earnings distributable from assets allocated to the covered business after sufficient allowance for the aggregate risks in the covered business. The IEV consists of the following components:

- The free surplus allocated to the covered business.
- The required capital identified to support the business and
- The value of in-force covered business ("VIF").

To assess the impact of increase in Direct Tax Rate on IEV of the insurance company, we need to assess the impact on the following components of the EV:

- Free Surplus
- Required Capital
- Present Value of Future Profits
- Frictional Cost
- CRNHR

Impact on Free Surplus:

The free surplus is the market value of any assets allocated to, but not required to support, the in-force business at the valuation date. The free surplus is the already accumulated retained earnings after tax or the initial shareholder infusion of money, hence this portion of EV is not exposed to taxation.

However, any unrealised gains or losses on the debt or on equity which forms part of free surplus, are subject to the higher tax rate resulting in higher/lower Free surplus.

Impact on Required capital:

Required Capital is the amount of assets, attributed to the covered business over and above that required to back liabilities for covered business, whose distribution to shareholders is restricted. The change in tax rate has no implication on the estimation of Required Capital.

Impact on PVFP:

The PVFP is the present value of future post taxation shareholder cash flows projected to emerge from the in-force covered business and the assets backing liabilities of the in-force covered business. Any change in the tax rate should impact the future net of tax profits emergence and hence the PVFP. This component of the EV is expected to go down resulting in reduction in EV.

Impact on Frictional Cost:

Frictional costs should reflect the taxation and investment costs on the assets backing the required capital. With increase in tax rates, this component should get impacted proportionately, resulting in increase in frictional cost and hence reduction in EV of the Company.

Impact on CRNHR:

The cost of residual non-hedgeable risk is calculated using the cost of capital approach wherein the risk-based capital is projected appropriately over the lifetime of the underlying risks. Then, a cost charge is multiplied to this capital and discounted using the RFR.

With increase in tax rates, the risk based capital requirement might go down, given the credit of deferred tax asset under stress scenario is allowed. Due to this, the cost of holding capital should reduce, resulting in reduction in CRNHR and hence increase in EV.

(1 mark for impact on each item of the IEV, ,max 6 marks)

[Max 51]

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