

# **Institute of Actuaries of India**

## **Subject SA2 – Life Insurance**

### **March 2017 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:**

Risk exposures of various types of risks for different product categories are discussed below.

i)

**a) Insurance Risks*****Mortality/Morbidity***

Generally, the Company would be exposed to the risk that the mortality/morbidity experience is adverse relative to the best estimate basis. This will hold true for all the three categories of products.

In relation to the new business written after the implementation of the 2013 product regulations issued by the Insurance Regulatory and Development Authority of India (“IRDAI”), the level of minimum death benefit is broadly similar across unit-linked products and traditional savings products. However, it may be the case that some of the older generation traditional products may have relatively lower levels of mortality risk exposure (e.g. death benefit of premiums accumulated at 6% p.a.).

In relation to the traditional non-participating savings products, the mortality/morbidity risk exposure is fully passed through to the Company.

In relation to the unit-linked products, the mortality risk exposure is generally fully passed through to the Company as the mortality charges are guaranteed throughout the policy term<sup>1</sup>. However, the morbidity risk exposure may be mitigated if the product features enable the Company to increase the morbidity charges if the experience is unfavourable. Such a revision would usually be subject to the IRDAI approval as well as after taking into account the Policyholders’ Reasonable Expectations (“PREs”).

In relation to the traditional participating savings products, the mortality/morbidity risk exposure is borne by the Company’s participating fund. Therefore, in the event of adverse mortality/morbidity experience, the losses may be absorbed by the participating fund estate, if any. If the adverse experience sustains, the Company may decide to reflect the same in the bonus declarations (generally through updating the asset share calculations), having regard to the PREs. Generally speaking, given the 90/10 profit-sharing gate for the participating funds, the Company would be exposed only to the extent of 10% of the mortality/morbidity risks exposure.

However, if the participating fund estate is insufficient to absorb the losses and these cannot be passed through in the form of bonus rate reductions, the Company will have to bear the mortality/morbidity losses in respect of the traditional participating savings products.

***Withdrawals (including lapses, surrenders, paid-ups etc.)***

The nature of withdrawal risk can vary quite a bit between various product categories as discussed in detail below.

Across all product categories, higher than expected withdrawals would result in overhead costs being spread across a smaller number of policies resulting in expense inefficiencies for the Company.

For unit-linked products:

- Greater than expected surrender experience could hurt the Company if the surrender charges are lower than the (present value of) future profits that could have accrued from the surrendered policies.
- Effective 1 September 2010, the IRDAI capped the surrender charges for unit-linked products to relatively low levels. Therefore, in respect of the new business sold since then, greater than expected surrenders will adversely affect the Company's profitability.
- For older generation unit-linked products (sold prior to 1 September 2010), the high surrender charges in the early policy durations could result in a situation that the Company may actually benefit from greater surrenders in early policy years. However, at later policy durations, once the surrender charges have tapered off, lower surrenders would normally be beneficial to the Company.

The traditional non-participating savings products are generally lapse supportive. In other words, the surrender benefits are generally lower than the notional asset shares and therefore the Company would benefit from surrenders being higher than expected. However, this may not hold true at early policy durations (e.g. if the initial commissions and expenses incurred are higher than the initial premiums received), unless the Company is able to clawback a significant portion of the initial commissions from its agents.

Similar to the traditional non-participating savings products, the surrender benefits for the traditional participating savings products are generally lower than the asset shares. However, depending on the Company's bonus management framework, the lapse / surrender surplus arising from the participating policies may either flow back to the remaining participating policies' asset shares or would be part of the estate in the participating fund. Although the Company may eventually receive a part of this surplus when it is utilized to declare bonuses, this would be restricted through the 90/10 profit sharing gate. The higher than expected withdrawals may result into expense inefficiencies and thereby offsetting the impact of lapse / surrender profits. Overall, higher withdrawals for traditional participating savings products may be slightly disadvantageous to the Company.

The impact discussed above for traditional savings products may be subdued in respect of the policies sold following the 2013 product regulations of IRDAI, given the upward revisions in the surrender value scales specified in these regulations.

**Expenses**

In relation to the unit-linked and traditional non-participating savings products, higher expenses will fully pass through to the Company and adversely affect its profitability.

In relation to the traditional participating savings products, higher expenses may not fully pass through to the Company if these can be absorbed by the participating fund asset shares. However, if the higher than expected expenses are on account of acquisition costs, these can't be charged to the asset shares as per the Guidance Note 6 (GN6) issued by the Institute of Actuaries of India (IAI) and therefore may need to be absorbed by the estate of the participating fund, if any.

The extent to which the Company can actually charge the excess expenses to the asset shares may also be dependent on the PRE of the participating policyholders.

Overall, a higher than expected expenses would be a significant risk to the Company and would impact its profitability adversely.

**b) Credit Risk**

Credit risks would relate to a credit event such as default by the creditor or a downgrading of the credit rating of the creditor.

In relation to the unit-linked products, the credit risk in the underlying unit-linked funds is fully passed through to the policyholders. If the Company has any unit-linked products providing investment guarantees (e.g. pension products), then the Company may have some exposure to the credit risk in that a credit event may cause the guarantees to bite.

It may be noted that the Company fully bears the credit risk in relation to the assets backing the non-unit reserves of the unit-linked business.

In relation to the traditional participating savings products, the credit risk is borne by the participating fund. However, if a credit event results in the participating fund being unable to meet the benefit and expense outgoes, then the Company will have to fund the shortfall.

In relation to the traditional non-participating savings products, the Company fully bears the credit risk.

**c) Market Risk**

Market risk would generally arise from the adverse changes in equity markets, real estate prices or interest rates.

In relation to the unit-linked products, the market risk in the underlying unit-linked funds is fully passed through to the policyholders. If the Company has any unit-linked products providing investment guarantees (e.g. pension products), then the Company may have some exposure to the market risk in that the market fluctuations may cause the guarantees to bite.

It may be noted that the Company fully bears the market risk in relation to the assets backing the non-unit reserves of the unit-linked business.

In relation to the traditional participating savings products, the market risk is borne by the participating fund. However, if the participating fund estate cannot absorb the impact of the market risk and the fund is unable to meet the benefits and expense outgoes, then the Company will have to fund the shortfall.

In relation to the traditional non-participating savings products, the Company fully bears the market risk.

#### **d) Liquidity Risk**

Liquidity risk generally relates to the risk arising from short term cash flow mismatches.

For a relatively young (only a decade old) insurer which is continuing to write new business volumes, the premium income is likely to be more than the benefit and expense outgo. Thus, the insurer is likely to be a net investor and the risk of having to liquidate assets at disadvantageous terms to meet the benefit and expense outgo may be low.

The liquidity risk for the traditional participating savings products and the traditional non-participating savings products may be relatively low due to the following reasons:

- Surrender benefits are generally punitive to try to encourage policyholders to remain invested until maturity.
- Maturity benefits are fairly predictable nearer to maturity and can be planned for by investing in appropriate short duration fixed income assets or cash.

In relation to the unit-linked products:

- During the lock-in period of five years<sup>2</sup>, there is no liquidity risk as the surrender benefits are payable only after the completion of five policy years.
- After the lock-in period, the Company may be exposed to some liquidity risk especially if the economic environment is uncertain and policyholders want to exit. The Company does not directly bear the liquidity risk as any distress sale of assets would flow through to the net asset value (NAV) of the underlying funds. However, this may result in PRE issues for the continuing policyholders.

#### **e) Operational Risk**

Operational risk relates to the risk of financial loss to the Company, resulting from inadequate or failed internal processes, people or systems, or external events.

Generally, the operational risk exposure will not vary much based on the product category.

However, a few sources of operational risk specific to product categories are listed below:

- Unit-linked products: incorrect unit pricing, mis-selling (e.g. in relation to expected investment returns), incorrect charge deductions, delayed execution of trade deals etc.
- Traditional participating products: inaccuracies in bonus calculations, mis-selling (e.g. not explaining that bonuses, especially terminal bonuses, may vary significantly relative to illustrations depending on the participating fund performance)
- Traditional non-participating products: mis-selling (e.g. benefits expressed as a % of sum assured may be marketed as representing investment returns)

Examples of operational risks common to all product categories include fraud by employees, mistakes in the operating systems, incorrect interpretation of regulatory requirements etc.

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ii) The traditional participating savings products operate as set out below:

- Policyholders are entitled to a certain minimum level of guaranteed benefits. In addition, policyholders also participate in the performance of the participating fund and are entitled to receive additional non-guaranteed benefits in the form of bonuses.
- Every year, the Company would declare bonuses depending on the surplus in the participating fund. By regulation, the participating funds have a 90:10<sup>3</sup> profit sharing gate and therefore shareholders are entitled to receive one-ninth of the cost of bonus distributed to policyholders.

The 90:10 profit sharing gate limits the profitability of a participating product from the shareholders' perspective:

- Any investment surplus generated is shared in the proportion of 90:10 between policyholders and shareholders.
- Since the Company primarily writes business through individual agency channel, there may also be sizeable lapse surpluses arising if the agency channel has been prone to mis-selling, resulting into high level of lapses and surrenders. This is because the surrender benefits in traditional participating savings products are lower compared to the underlying asset shares. This surplus will also be retained within the participating fund and shareholders may be entitled to receive only 10% of it if and when it is utilised to declare bonuses.
- Likewise, mortality or expense surpluses, if any, will also be retained within the participating fund and shareholders will be entitled to receive only 10% of these surpluses as and when utilised to declare bonuses.

Given the 90:10 profit sharing gate, one lever to increase the profitability is to reduce the level of implied guarantees in the product (i.e. charge higher premium rate per 1000 sum assured).

This would result in a greater level of investment surplus and therefore allow the insurer to increase shareholder transfers by declaring higher policyholder bonuses.

However, since the Company has not written traditional participating savings business before, it may not be able to offer lower level of guarantees due to marketability reasons. Also, IRDAI may impose limits on the minimum levels of implied guaranteed benefits that should be offered (e.g. at least 0% p.a. IRR to policyholder at an illustration interest rate of 4% p.a.) Hence, the Company may not be able to lower guarantees below a certain level.

It is pertinent to note that if the participating fund were to be in deficit, then the shareholders have to top up the deficit through injections into the fund from shareholders' fund and such injections are not repatriable other than through the regulatory 90:10 profit sharing gate. In the initial years of a new participating fund, the fund may not generate statutory surpluses and the Company may have to inject monies into the participating fund to eliminate the deficit and declare the bonuses. Such injections may further constrain the profitability of the participating business for the initial few years.

In comparison, the traditional non-participating savings products operate as follows:

- Policyholders pay premiums in exchange for guaranteed death and maturity benefits which are set at outset. Unlike participating products, there is no additional discretionary benefit (e.g. bonuses or non-guaranteed additions) and therefore policyholders know exactly what they will receive upon death or maturity provided they pay their premiums when due.
- Typically, surrender benefits are not fully guaranteed. Policyholders receive a minimum guaranteed surrender value (as specified by the IRDAI) or a special (non-guaranteed) surrender value, whichever is higher.

In contrast to the traditional participating savings products, in a traditional non-participating savings product:

- Any investment surplus generated over and above that required to pay the guarantees provided to policyholders is fully attributable to shareholders.
- Generally, the surrender benefits for traditional non-participating savings products are lower than the notional asset shares. High lapses / surrenders may, therefore, result into a sizeable lapse / surrender surplus to emerge. However, unlike the traditional participating savings product, in a traditional non-participating savings product, such lapse / surrender surplus will be fully attributable to shareholders.
- Likewise, any mortality or expense surpluses will also be fully attributable to shareholders.
- Given that the Company takes most of the risks in a traditional non-participating savings product and doesn't share these risks with the policyholders (as in the case of a traditional participating savings product), these products are priced with an explicitly higher profit

margin loading. Thus, if the actual experience is in line with that expected, the high profit margin loading emerges to be attributable to the shareholders.

Overall, therefore, as long as the Company does not offer investment guarantees that are unreasonable relative to the prevailing and future interest rates, traditional non-participating savings products are likely to be more profitable relative to the traditional participating savings products.

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iii)

The IRDAI permits insurers to use derivatives to hedge the following risks:

- Risk of lower investment returns on the reinvestment of maturity proceeds of the existing fixed income instruments
- Risk of lower investment returns on the reinvestment of receivable coupons or interest income
- Risk of lower investment returns on expected renewal premiums on insurance policies already underwritten

Thus, the Company can only hedge the investment risks on the in-force business from time to time but not the risks related to future new business. In addition, the use of derivatives is permitted only for the purpose of hedging the interest rate risk and not for yield enhancement purposes. The Company must be able to demonstrate adherence to this principle.

The IRDAI allows the insurers to deal in the following Rupee-denominated derivative instruments:

- Forward Rate Agreements (“FRAs”)
- Interest Rate Swaps (“IRS”)
- Exchange Traded Interest Rate Futures (“IRFs”)

An FRA is an over-the-counter (“OTC”) contract between two counterparties to exchange a fixed interest payment for a floating interest payment on a single date.

An IRS is an OTC derivative whereby two counterparties agree to exchange interest cash flows (e.g. pay fixed, receive floating) on a specified notional amount agreed at the outset. Essentially, an IRS is a collection of a series of FRAs. By regulation, the counterparties have to be commercial banks or primary dealers as permitted by the Reserve Bank of India (RBI).

An IRF is an exchange-traded agreement to buy or sell a debt instrument at a specified future date at a price fixed at the outset.

From a hedging effectiveness standpoint, an IRS may be the most suitable option of the three to minimise the interest rate risks faced by the Company on its traditional non-participating savings

product. The Company can structure an IRS with a bank to receive fixed interest in exchange of paying floating interest. The underlying notional amount can be accreting and can reflect the expected future renewal premiums, taking into account expected policy persistency rates. Thus, the hedge can be constructed to closely follow the expected reserve build-up on the in-force business.

As and when the Company receives the renewal premiums, it can invest them at the then prevailing new money rates. If the interest rates have fallen as compared to those at the time of pricing the product, the payoff receivable from the IRS counterparty will cover the shortfall thereby reducing the Company's interest rate risk exposure.

However, the following must be taken into account:

- By entering into an IRS, the Company trades off the potential upside for obtaining the downside protection. It is quite likely that the 'expected' profitability of the product, after reflecting the costs of an IRS may be lower than the profitability without a hedge. However, entering into the hedge reduces the variation in the profitability from shareholders' perspective.
- Since IRS is an OTC contract, the Company will be exposed to the counterparty risk. Any default by the counterparty on its commitments in a scenario of a fall in the interest rates may result into a further reduction in the Company's profitability than that if the hedge had not been in place.
- The underlying notional amount of an IRS is determined at the outset reflecting expected persistency. To the extent the actual persistency varies from that expected, the Company may still be exposed to a fall in the interest rates. For instance, in a situation where interest rates fall, lapse rates may reduce since the non-participating policies become more valuable to policyholders. In such a case, the hedge may only provide a partial protection.
- By regulation, the Company can only hedge the risks in case of in force business. Since the traditional non-participating block is open to new business, the Company will have to enter into fresh IRS from time to time to cover various cohorts of business. If the interest rates have fallen between the time of writing new business and the time of entering into the corresponding hedge, the Company will have to bear such a shortfall.
- Given the OTC nature of the IRS market, the market itself may not have too many participants, resulting into a higher cost of the IRS. The tenure of the IRS contract may not be long enough to cover the outstanding duration of the liabilities. The Company may therefore, still be exposed to risk of future interest rate falls beyond the term of the IRS. Both these factors may impact the profitability of the traditional non-participating savings contract adversely.

An IRF may provide only an approximate hedge relative to an IRS but it may still be an option to explore because it is relatively easier to implement due to its exchange traded nature.

The Company will also need to take into account following considerations before implementing a hedging programme:

- The Company needs to frame a detailed Board-approved risk management policy in relation to the usage of derivatives.
- The Board needs to ensure that the Rupee interest rate derivatives are suitable for the Company's portfolio and the liabilities undertaken by the Company.
- The Board and the senior management need to understand the nature of the risk undertaken, complexities involved, stress scenarios etc. At least once a year, the Board should review the contracts entered into by the Company.
- The Company must formulate its accounting policy for derivatives and ensure that it is ready to make the required disclosures in the financial statements

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iv) The areas of PRE for the traditional non-participating savings products and how these can be managed are set out below:

#### ***Surrender Values***

Typically, insurers pay a guaranteed surrender value or a special surrender value, whichever is higher. The policyholders, may, therefore have an expectation of a certain level of surrender value. The Company could manage the PRE through the following:

- Ensuring that special surrender values illustrated at the outset are reasonable.
- Ensuring that any changes to the special surrender values are justifiable. For instance, if the special surrender values were reduced following a crash in equity markets, it may not be reasonable considering that policyholders were not entitled to any potential equity returns if they held their policies until maturity.
- Periodically revising the surrender value scales and publishing the same on Company's website / communicating the same to policyholders.
- Ensuring that the change in the surrender value scale is not drastic (unless warranted by circumstances) from year to year.

#### ***Claims Settlement***

Given the long term nature of the insurance product, policyholders would reasonably expect that the Company is financially well managed so as to honour its commitments over time. The Company could manage the PRE through the following:

- Ensuring that the liabilities are adequately provided for, particularly taking into consideration the guarantees in traditional non-participating savings products
- Ensuring that the Company remains solvent at all time
- Ensuring that the contract terms are unambiguous and clear
- Ensuring timely settlement of valid claims

#### ***Service Levels***

Policyholders would reasonably expect the Company to provide appropriate level of customer service throughout the policy duration. The Company could manage the PRE through the following:

- Ensuring that it has put in place robust systems and processes for policy administration
- Publishing the turn-around-times (TAT) for various tasks on its website
- Ensuring timely turnaround of various policyholder servicing requests such as nomination, assignment, policy loans etc.
- Having a written and published policy on dealing with policyholder complaints, including escalation matrix and contact details of appropriate persons.

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v)

The minimum adverse scenarios to be considered while determining the MADs for the statutory reserves under the APS-7 are set out below.

#### **Interest Rates**

An immediate rise or fall, from the current best estimate assumption, of 10% of the current gross redemption yield on 10-year government bonds for the next five years. Thereafter, a rise or fall of a further 10% of current yields, whichever is more adverse for the Company.

#### **Mortality**

For assurances: experience is 10% worse than current best estimate assumptions.

For annuities and annuity options: mortality is 10% better than the current best estimate assumptions and continues to improve at around 0.5% pa.

Allowance may be made for any flexibility to adjust mortality charges, subject to other considerations, such as constraints placed by competition.

#### **Morbidity**

For assurances: experience is 10% worse than current best estimate assumptions.

Allowance may be made for any flexibility to adjust morbidity charges, subject to other considerations, such as constraints placed by competition.

#### **Withdrawals**

An increase or decrease (whichever is adverse to insurer) of 20% of the best estimate experience of the insurer or industry experience.

If there is no experience available, professional judgment may be exercised in setting the MADs.

**Expenses and expense inflation**

Management expenses are 10% more than the best estimate assumptions and increase at a rate, which is consistent with the assumed interest rate on new money.

If there is expense overrun in a Company, the future maintenance expenses should be calculated on a more prudent basis.

**Bonus rates**

Bonus rates adjusted to the extent possible to allow for experience and the PRE.

It may be assumed that bonus rates can be set broadly in line with asset shares, but only where the Actuary can be satisfied that this is not contrary to PRE.

**(6)**  
**[50 Marks]**

**Solution 2:**

i) Regulations in respect of apportionment of indirect expenses are set out in IRDAI (Expenses of management of insurers transacting life insurance business) Regulations, 2016, which require that:

1. Every insurer shall have a well-documented policy for allocation of direct expenses and apportionment of indirect expenses of management amongst various business segments.

The policy shall, at the minimum, cover:

- Expenses which shall be allocated;
- Basis of allocation;
- Expenses which shall be apportioned;
- Basis of such apportionment;
- Manner of allocation and / or apportionment of acquisition expenses and renewal expenses; and
- Manner in which the compliance with the policy shall be ensured.

The policy shall be approved by the Board of Directors of the company and the same shall be available for inspection by the IRDAI.

2. The Appointed Actuary and the Chief Financial Officer shall be responsible to allocate and apportion the expenses of management in accordance with the Board approved policy.

3. The policy shall be subject to annual review by the Board. Any revision in the policy shall be disclosed in the Annual Report along with its implication on various segments.

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## ii)

The IRDAI (Assets, Liabilities and Solvency Margin of Life Insurance Business) Regulations, 2016 require that policy maintenance expenses shall have regard to the actual expense experience of the insurer. More generally, in respect of setting valuation parameters, the same regulation further requires that each parameter shall have to be appropriate to the block of business to be valued; and further that the Appointed Actuary should take into consideration the value(s) of the parameter that is based on the insurer's expense study, where available.

Hence, as a general principal, insofar as the expense allocation exercise is undertaken in accordance with the Company's Board approved policy for the same and considers all relevant expenses of management appropriately, then it would be reasonable for this to be used as a basis for setting the maintenance expense assumptions to be used in the Company's statutory valuation.

It should be noted that a margin for adverse deviation should be applied over the unit-costs derived based on the experience analysis for use in the statutory valuation, which in the case of expenses should be at least 10% as per the Actuarial Practice Standard (APS) 7.

Having noted the general principle above, considering the key conclusions of the analysis itself, it is observed that:

- For the participating business, the experience and the business plan are broadly aligned. Moreover, this is a reasonably mature line of business for the Company. Hence, it would be appropriate to use the unit loadings implied by the investigation as the basis for setting the valuation assumption for this line of business (along with appropriate MADs as per APS7).
- However, for non-participating business, it appears that the unit-cost loadings from the investigation are materially different to the current expense assumptions (which are based on the assumptions used at the time of pricing). This is a relatively new line of business and it is stated that the expense allocations have been undertaken based on activity-based allocations. Hence, it is quite likely that a disproportionate level of activity (and hence, expenses) currently relates to acquisition of the business, which might be due to the fact that most of the effort is currently being expended on sales related activities. Moreover, ongoing maintenance tasks may not have yet become significant, since given the early policy durations, there would not have been many claims, surrender and other policyholder servicing requests etc. Hence, due to its nascent and developing nature, it is possible that the maintenance costs are under-stated and thus, it may not be appropriate to determine long term unit cost loadings solely on the basis of the activity-based expense investigation and allocations.

In view of the above, for statutory valuation purposes the following alternatives or adjustments may be considered:

- a. **Use of an industry study:** The IRDAI (Assets, Liabilities and Solvency Margin of Life Insurance Business) Regulations, 2016 notes that as a general principle for valuation parameters, if reliable (internal) experience study is not available, then the parameter values may be based on an industry study, if available and appropriate.

In the current case, it may be argued that the current expense study is not reliable in the context of setting unit cost assumptions for non-participating business – in-force portfolio is limited as well as relatively young to be able to estimate reasonable long term loadings based on the Company's own data.

In the case of expenses, it is highly likely that expenses of a particular company depend on company-specific parameters, particularly with respect to the Company's operating and distribution models, internal synergies and overall management efficiencies. Furthermore, an industry wide study of expenses may not be as readily available (as may be in the case of say, mortality).

Nonetheless, even if a 'bottom-up' industry expense study is not available, all life insurance companies in India are required to disclose their valuation parameters as part of their quarterly public disclosures. Hence, it would be useful to at least benchmark the expense loadings implied by the investigation against those used for statutory valuation purposes by industry peers – which would, as a minimum, provide a reasonable range for valuation expense parameter to be used. Moreover, it might be preferable to put more weight to companies that have a similar operating and distribution model to own company, to enable richer comparison against industry data.

- b. **Use of pricing assumptions:** it is noted that the Company currently uses pricing expense loadings, and may continue to do so for non-participating business.

This would be an acceptable reference point, provided that at the time of pricing, sufficient consideration was given to the expected long term expense levels (together with expected volumes). Moreover, using pricing expenses is also mentioned as the acceptable approach to setting assumptions, if neither the internal experience nor an industry study is available.

However, the pricing was undertaken two years ago, and it is possible that unit costs used at the time have since become less relevant or applicable. The least we could do is to increase the pricing unit costs by the actual inflation rate experienced over the past two years.

In practice, it might be better to over-lay the pricing unit cost loadings with the current medium or long term business plan (if available and reasonably recent) to assess the current long term view of the maintenance expenses for this line of business.

- c. **Adjust experience analysis to be "less granular":** A further possibility might be to adjust the expense analysis such that the maintenance expense loadings are derived for the business as a whole – considering that participating and non-participating lines of business together, rather than further splitting maintenance expenses by line of business.

This might be considered an interim measure until further experience develops for the non-participating business to be able to determine credible assumptions, varying by line of business. This has the advantage that assumptions would still be based on the Company's own experience (and hence reflect own business, distribution, operating model etc.).

However, the disadvantage of this approach is that it may result in a "blended" assumption, which may not reflect the true costs of the underlying businesses in the long run. For example, if participating business is expected to have higher unit costs due to greater complexity and greater governance requirements placed upon it than non-participating business, the blended approach may not capture the same.

Another concern with this approach might arise, in case this violates the Board-approved expense allocation policy and results in an allocation different to that based on the policy approved by the Board.

- d. **Adjust MADs:** Another way to potentially reflect expectations of higher maintenance unit costs for non-participating business might be increase the expense MAD for this – to reflect the fact that the experience may not be sufficiently credible.

However, there may be several concerns of this approach – as the underlying philosophy of having MADs is to allow for a margin of uncertainty over best estimate, rather than to be used as a mechanism to adjust the level of best estimate assumptions themselves (for the purpose of statutory valuation).

- e. **Hold additional provision:** The Appointed Actuary may choose to go ahead with the CFO's suggestion of using the expense analysis as a basis for determining valuation assumptions. To the extent that these are deemed to be lower than expected long term levels, an additional provision may be established by the Appointed Actuary. However, from a practical perspective, in order to establish such a provision, a view of what the long term unit loadings is would be required in the first place. Also, having such a provision may be difficult to explain / justify, particularly without questioning the validity of the valuation parameters themselves.

In practice, it is possible that rather than applying a single approach, a combination of more than one of the above is likely to be adopted. Regardless of the approach adopted, overall the unit-cost assumptions should be set in a manner that these represent reasonable loadings required to provide for ongoing renewal expenses and maintenance over the run off of the business, together with appropriate margins for adverse deviation.

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iii)

Key consideration when deciding to change the bonus philosophy of the Company would be as follows:

- a. **Consistency of bonus rates from year to year**

In general, for a policyholder, it would be reasonable to expect that the reversionary bonus rates of the Company are steady and even when these do change, the changes are gradual

and allow for a degree of smoothing. Such a steady rate of bonus is more easily achieved in case the Company has declared (at least in some years) lower than maximum possible bonus rates so that over time there is a gradual build-up of a smoothing fund (or an accumulated estate) that might be eventually distributed either when the returns are lower in a given year or as a terminal bonus.

However, given that the Company has historically followed an approach of declaring only reversionary bonuses without any terminal bonuses, it may be likely that the level of such an estate is limited, which might be further corroborated by the fact that the Company is now considering changing the bonus philosophy due to only a recent interest rate fluctuation (which might indicate that the Company does not have sufficient funds for smoothing purposes in the current scenario).

If this is indeed the case, then it is also possible that historical bonus rates have been relatively more volatile and policyholders may not necessarily have an expectation of a steady bonus declaration, but are happy to accept year on year fluctuations. In this case, the Company could well consider reducing the (reversionary) bonus rates in the current year and then subsequently increasing them in future if the investment returns perform better than (currently) expected, if ongoing adjustments to the bonus rates are acceptable.

**b. Equity between generations of policyholders**

On the contrary, by having lower, steady reversionary bonuses and a (potentially) heavy ultimate adjustment for terminal bonus, it is usually easier to achieve equity between different generations of policyholders rather than by frequent adjustments to (reversionary) bonus rates depending on year-on-year performance. This may be a desirable objective anyway, regardless of the historic treatment and current policyholder expectations, so the Company may be able to justify the change in philosophy on these grounds.

**c. Ease of computations and bonus declarations**

It is possible that the Company is maintaining a simplistic bonus philosophy whereby surpluses in any given year are translated to simple reversionary bonuses, which subsequently get guaranteed and invested in corresponding assets matching the additional guaranteed liability. This is a relatively simpler routine than having to additionally determine, each year, proportion of surpluses to hold back / distribute as terminal bonus as well as reviewing terminal bonus scales over time (and across different blocks of the business).

Hence, before deciding to revise the bonus philosophy, the Company should consider that it might add additional complexity in future bonus investigations than currently might be the case.

**d. Impact on smoothing**

The current bonus philosophy limits the degree to which smoothing can be effectively applied, while also maintaining equitable distribution of asset shares. This is because, in case the Company withholds surpluses for smoothing, then it must distribute these back as future reversionary bonuses only, as there are no terminal bonuses. Hence there may be conflicts between equitable distributions of asset shares versus accumulated bonus payouts, if there is also an active smoothing policy in place.

It would be easier for the Company to smooth returns over time, if it also has the ability to declare terminal bonuses to be able to payout any residual asset shares. Hence, from a smoothing perspective, the revised bonus structure may be more attractive (without compromising on equitable distribution).

**e. Implications for investment strategy and policyholder returns**

In general, judicious investment strategies imply that future benefits, to the extent that they are guaranteed are backed by “safer” assets such as government bonds and other fixed interest instruments, whereas benefits that are discretionary provide a degree of investment freedom.

In case surpluses have historically been declared as reversionary bonuses only (and hence become guaranteed post declaration), then it is possible that all of the surpluses get invested in such safer fixed interest assets. However, in case the Company now chooses to declare only part of the surplus as reversionary bonus and hold back part of it for future potential declaration as terminal bonus, this provides some investment freedom to the Company for potentially investing such undistributed surplus in higher yielding assets (albeit carrying higher risk).

This might be desirable in case this results in higher investment returns for the policyholders. However, at the same time, this adds an additional degree of risk and uncertainty in respect of future discretionary bonuses. Hence, when considering the change in bonus philosophy, the Company should also consider carefully its investment philosophy together with its view on desired risk versus reward balance for its participating fund policyholders.

The Company should also consider that any investment flexibility may still be constrained by the investment regulations issued by the IRDA. Thus, in practice, the proportion of assets invested in higher yielding instruments may be limited.

**f. Capital position**

Holding back some surpluses as undistributed estate (or funds for future appropriations, ‘FFA’) may help improve the Company’s capital position in two key respects: First, the Company would now have lower bonuses, and hence lower guarantees, translating to lower capital requirements (to the extent that undistributed estate is not expected to be

distributed as future bonuses and therefore are required to be reserved for). Secondly, the surpluses so held back as FFA would themselves act as a source of available capital to demonstrate solvency position. Hence, the Company may be able to improve its capital position with the proposed change in the bonus philosophy.

**g. Policyholder expectations and treating customers fairly (TCF)**

An important consideration would be with regards to policyholder expectations. Changing the bonus philosophy in view of market circumstances might conflict with principles of TCF, as policyholders would reasonably expect continuation of past practice as regards the splits between reversionary and terminal bonus and are unlikely to welcome a move towards higher terminal bonus element.

Moreover, key aspects set out above (such as volatility of year on year bonus declarations, equity across generations, investment return expectation etc.) would have already become implied based on past practice and changing the same might disturb this significantly. Hence, if the Company chooses to change the bonus philosophy, then it needs to carefully consider appropriate communications to the policyholders as well to manage expectations appropriately and ensure clear understanding of implications of such a decision.

**h. Competitive position**

It is possible that the regular reversionary bonuses declared with no intention of future terminal bonuses are higher than the reversionary bonuses that would have been declared if there was a terminal bonus scheme in effect. This may be because in the case of the former, a greater proportion of surplus that emerges each year is distributed as regular reversionary bonus, whereas in case of the latter, part of the surplus that emerges may be withheld from distribution over the policy term for eventual distribution as terminal bonus.

This might imply that competitive comparisons, purely based on annual bonus declarations, would suggest that the Company fares better than other insurers who may be withholding some surpluses for future terminal bonuses. The Company should consider carefully impact of such comparisons to its competitive position and ensure that it is not hampered adversely. The Company may need to ensure that it is appropriately communicated that total returns would be calculated based on a combination of regular reversionary bonuses and eventual terminal bonus and not just reversionary bonus declared. This messaging may not be easily delivered in case there are well-established comparisons in the market based on past practices of different companies.

**i. Implications for surrender benefits**

A more subtle implication of the proposed change might be to the manner in which surrender benefits are calculated. If, at the time of pricing, surrender factors were determined assuming annual reversionary bonuses only and this is now revised to a

combination of reversionary and terminal bonuses, then the existing surrender factors may no longer apply as there would be a need to assign a terminal bonus on surrenders too.

Hence, the Company should consider carefully how the different benefit structures would get impacted by changing the bonus philosophy.

**j. Regulatory explanations**

It is quite likely that the Company would be scrutinized closely by the regulator for such a change in the bonus philosophy and hence should prepare itself accordingly to explain any such decision to revise the bonus philosophy.

**k. Governance**

The Company should consider carefully its governance framework and decision making process for such a change. It should not be the case that a change in the bonus philosophy is driven purely by one or few management personnel, but rather a proper governance process is followed. This should include an engagement with the with-profits committee, including inputs from the independent actuary, as well as approval of the Board of Directors. Such significant changes should not be undertaken unilaterally, but rather go through a thorough consultation process among key stakeholders affected.

**l. Administration aspects**

The Company will also need to consider the various administrative aspects in implementing any changes in its bonus philosophy. This would include making sure that the administration system is changed to accept both the reversionary and terminal bonus rates, a thorough user acceptance testing (UAT) is performed, the annual communication to policyholder is appropriately amended, the point of sale illustrations are appropriately amended etc. The time and cost required to implement such changes need to be considered whilst weighing the merits of the proposed changes.

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**iv)**

The key risks to the Company of launching the new health insurance product with assistance from the reinsurer are discussed below:

**a. Compliance**

It is noted that the reinsurer has offered the Company an off-the-shelf, internationally successfully product. Hence, there is a risk that the product design or other features may not be fully compliant with the IRDAI regulations related to health products. Whilst it would be reasonable to expect that the reinsurer would have undertaken its own assessment of regulatory compliance before approaching the Company (more so, since it is already stated that the reinsurer has significant presence in India, so it would be reasonable to expect that the reinsurer is familiar with the local regulations), but the Company should nonetheless

validate full compliance before proceeding, as ultimately this responsibility would fall onto the Company itself.

**b. Morbidity underwriting risk**

It is noted that the Company currently does not have a health insurance offering, hence it is likely to have no / limited experience and expertise related to health products. Thus, it would possibly be relying on the reinsurer significantly until such experience and expertise develops within the Company. In underwriting the health insurance product with the assistance from the reinsurer, the Company may be taking on a significant underwriting risk, in case the loss ratios / claim incidence rates implied by the reinsurer's risk rates turn out to be inadequate. This may be particularly relevant if:

- the Company is retaining a significant portion of the risk; and / or
- the reinsurer has reviewability clauses (i.e. it may review / revise the risk premium rates based on experience) but the Company, in turn does not have such clauses vis-à-vis the policyholder; and / or
- the reinsurer has relied only on its international experience, and not adjusted the product benefits, pricing, contract terms etc. to the local Indian conditions sufficiently.

The Company should take further care in underwriting this new line of business, and may consider adding additional loadings / margins within its premium rates, to the extent feasible from a competitive perspective.

**c. Health management systems and processes**

Given a new line of business, it is possible that the Company may have to enhance / amend its systems and processes – which may lead to a greater operational risk. This may not be as much a concern in case the product design is largely based on lump sum benefits upon incidence of specified illnesses, as opposed to indemnity type products (which may be even more complex to manage, and generally not permitted to be offered in a life insurance context).

Related to this, having a reinsurance arrangement in place itself introduces a further source of systems and data risk. Reinsurance involves a number of additional administrative operations and reinsurers may rely on the Company performing its side of the contract in a timely and accurate manner. For example, there are risks that reinsurance premiums will be calculated incorrectly or that recoverable claims will not be identified correctly. If one side fails on its administration then remedies may have to be negotiated between the parties, unless specified in the treaty. Moreover, reinsurance can also mean the creation of additional data records for reinsured lives, and it is important that all records are managed consistently.

**d. Counterparty risk**

As noted above, it is possible that given that the Company would be entering the health insurance space for the first time, the initial reliance and exposure to the reinsurer is large. This introduces a counterparty risk, should the reinsurer fail to meet its commitments. However, depending on the credit rating and market standing of the reinsurer, this may be less of a concern at an institutional level, but more relevant in respect of the specific treaty, which might, in turn lead to legal risk, as described below.

**e. Legal risk**

Reinsurance is governed by a treaty, a legal contract, between the cedant and the reinsurer. The reinsurer may take advantage of its greater experience and expertise and it is possible that certain clauses protect the reinsurer more in case of adverse experience, exposing the Company. For example, subtle wording changes in the definitions of certain health ailments or surgical procedures may mean that a claim may not be payable under the reinsurance treaty.

There is a further risk of disputes arising due to different interpretations of the contract wording, which might lead to the reinsurer not meeting its (perceived) commitments. Hence, further care may be needed in drawing up the reinsurance treaty, particularly given the new line of business.

**f. New business volumes and business mix**

Given a new product launch, it is likely that the Company will have budgeted for certain level of new business volumes and business mix and allow for it in the pricing of the product (particularly, in respect of say, expense loadings in the premium rates). There is a risk that these expected volumes may not be achieved and/or the business mix is adverse.

Nonetheless, this is a matter related to any new product pricing and not specifically related to the health insurance product to be launched with the assistance of the reinsurer, so it is possible that the Company is able to manage this better.

**g. Conduct risk**

Conduct risk is defined as the risk that “firm behaviour will result in poor outcomes for customers”. Given a new line of business, this may be further heightened – both for existing policyholders (if the new line of business results in poorer outcomes for existing policyholders due to shift in the Company’s focus) as well as new policyholders for the health business (in case controls around distribution / servicing etc. are not as robust and well-established as might be the case for a different company with greater experience of selling health products).

Moreover, there is greater chance of information asymmetries – both with respect to the product design and pricing (between the reinsurer and the Company) as well as between the Company and the policyholders.

**h. Model risk**

Model risk arises from the use of a model's results by firms without knowing that these results are either wrong or are not sufficiently accurate or appropriate for the intended purpose. This can ultimately lead to inappropriate disclosures and/or sub-optimal business decisions (e.g. when assessing and managing risks or capital).

Again, this may be particularly relevant given no prior experience of health business and hence it is possible that the models associated with this line of business pose additional risk to the Company. This covers risks arising not just from the pricing models, but also from reserving, capital management and other shareholder reporting models.

**(16)**  
**[50 Marks]**

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