

Institute of Actuaries of India

Subject ST2 – Life Insurance

November 2012 Examinations

INDICATIVE SOLUTIONS

Introduction

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

SOLUTION - 1

i. Examples of alteration

- Making the policy paid up
- Alter the sum assured
- Alter the premium payable term as well as the amount.
- Change the term of the contract.
- Change contract type – endowment to whole life or vice versa

ii. Principles of alteration

- The key principle is that the terms after alteration should be supportable by the earned asset share at the date of alteration so as to avoid the company making a loss

Other principles include

- Consistency with boundary conditions, e.g. surrender, paid-up, new policy
- Stability (i.e. small change in benefits should result in small change in premium)
- Avoidance of lapse and re-entry
- Avoidance of anti-selection e.g. extending the term or increasing the sum insured without evidence of good health.
- Fairness in terms of extracting a suitable amount of profit from the altered policy
- Ease of calculation and of explanation to the policyholder.

iii. Methodology and their suitability

1. Equating policy values

Method

- The value of the contract before alteration, on a prospective or retrospective basis, can be equated to a prospective value after alteration that takes into account the requested changes to the terms of the contract.
- The method can be used for any type of alteration, including conversion to paid-up status.
- For general alterations, the principle of the calculation is that the reserve for the policy held before the alteration should equal the prospective reserve of the altered policy plus the costs of alteration, C.

i.e. (Old policy value) = (New policy value) + (Alteration expenses)

In general, the approach of equating policy values can be made appropriate in almost all types of alterations provided appropriate bases are chosen

Meeting the principles

- The method will produce consistent surrender values immediately before and after alteration if the same methods and assumptions are used as for calculating surrender values.
- For an extension of term or increase in benefit, use of the current premium basis to calculate the before and after alteration policy values would ensure consistency with the terms for new contracts. It is unclear if other bases would.
- For an extension of term or increase in benefit medical underwriting questions would be asked.
- There will be consistency between the terms for alterations, surrender values and conversions to paid-up status, if the same bases are used.
- Assuming the same basis is used for the before and after policy values, the method is stable.
- It will not necessarily avoid lapse and re-entry and the company would need to check that the premium being charged after alteration is not more than what it would charge for a completely new contract.
- Provided that the policy value before alteration is not greater than the earned asset share and the basis for the policy value after alteration is not weaker than a best estimate basis, the alteration terms should be affordable.

2. Proportionate paid-up values

Method

- For without-profits endowment assurances, the paid-up value may be calculated as the basic sum assured multiplied by the ratio of the total number of premiums actually paid to those originally payable throughout the total term.
- For with-profits businesses, similar method can be used where sum assured can be taken as basic sum assured plus any bonus already attached in case of addition to benefits benefit

Meeting the principles

- Proportionate paid-up values are usually too high at short durations, because they do not allow for the high initial expenses. At medium durations, on the other hand, they tend to be too low because no allowance is made for investment earnings.
- This would mean that the proportionate paid-up method do not provide a fair value at all durations
- At early durations, the method may lead to higher amount than earned asset shares
- The method is unlikely to be consistent with surrender values
- The method does, however, have the virtue of being a very simple one to apply and explain to policyholders

3. Surrender value respread to reduce future premiums

Method

- This method is primarily used for alterations other than conversions to paid-up status and involves the following steps:
 - (i) Calculate the premium the company would charge, on the current premium basis, to provide all the policy benefits after alteration.
 - (ii) Calculate a special surrender value, of the existing contract, that makes allowance for the initial expenses included in the premium in (i).
 - (iii) Reduce the premium in (i) by spreading the special surrender value over the outstanding term – using the premium basis assumptions as in (i) – and deducting.
- This is a simple method, which will work well in some circumstances but will not be consistent with all other terms offered.
- Overall, the method is rarely preferable to equating policy values. It relies on the availability of a surrender value and premiums for the new policy, but then modifies both to avoid inappropriate results.

Meeting the principles

- The method produces reasonable results when the outstanding term is reduced substantially, running into the normal surrender value for conversion to immediate maturity.
- It takes account of the terms for new business on a substantial increase in term or in benefits.
- The terms for new business would imply that the person is underwritten at the point of conversion.
- Lapse and re-entry will not be a problem, since premium after alteration cannot by definition be greater than that for a new contract.
- The terms will be affordable by the company, provided that the special surrender value does not exceed the earned asset share at the date of alteration.
- The method can produce unreasonable answers for small changes in outstanding term or sum assured, depending on the surrender value basis and any changes in premium rates since the policy was effected. For example, a small increase in endowment term may produce an increase in premium if the surrender value extracts too much profit.
- It may not be consistent with conversion to paid-up status on a substantial reduction in premium, with outstanding term unchanged.

4. Paid-up policy value plus premium for balance of sum assured

Method

- This method cannot be used to calculate the terms for conversion to paid-up status. It involves the following three steps:

(i) The policy is notionally converted to a paid-up policy at the alteration date.

(ii) If the alteration involves a change in the outstanding term to maturity, the paid-up amount is converted to be appropriate to the new outstanding duration by the use of reversion factors, i.e.

$$\text{Paid-up sum assured after change} = \text{Paid-up sum assured before change} \times \frac{A_{x+t;n-t}}{A_{x+t;m-t}}$$

where n and m are the original and revised total terms respectively.

(iii) A premium – calculated on the current premium basis – is then charged for the balance of the required sum assured over the – if need be, converted – paid-up policy amount.

- Use of the current premium basis implies the life should be underwritten at conversion.
- Overall, the method is rarely preferable to equating policy values. It relies on paid-up values and premium terms being available, but then modifies both values to avoid inappropriate results

Meeting the principles

- The method produces acceptable results when applied to reduce the premium substantially, running into the paid-up value if the term is unchanged.
- It would be unlikely to reproduce the original premium if a policy is altered to itself.
- If the paid-up value is based on the surrender value, i.e. it is the latter thrown into reversion using the surrender value basis assumptions, then a reduction in the outstanding term to zero would produce the normal surrender value. However, if conversion to paid-up status is on some other basis then the method may well be inconsistent with the surrender value on a substantial reduction in outstanding term.
- It is not immediately obvious whether it meets the other principles.

5. Accumulation of premium arrears/surplus

Method

- This method cannot be used for conversions to paid-up status.
- The premium is compared with that which would have been paid had the policy been in its altered form from the outset. The difference is accumulated to the alteration date before being spread forward as an adjustment to the latter premium.
- Overall, the method is rarely preferable to equating policy values, except very early on in the term of a policy when it can almost be “forgotten” that the original policy was taken out.

Meeting the principles

- The method leaves the premium unchanged if the policy terms are unchanged. Hence it is good for small changes to duration or sum assured, particularly very near to entry.
- If expenses and mortality could be ignored, and if the arrears/surplus were accumulated on the premium basis, then consistency could be achieved with surrender values and paid-up values if these also followed the premium basis.
 - One issue this point is alluding to is the fact that the method is actually often technically incorrect. The method ignores the fact that if the “new” policy had been taken from outset, different death benefits would have been given. Late on in the term of a policy, this issue can be material.
 - In practice, because expenses – such as commission – vary with term, such consistency is unlikely to be achieved for substantial reductions or extensions in term.
 - Moreover, the premium basis may change and hence, quite apart from expenses and mortality considerations, a substantial extension of term would probably not be consistent with current premium scales.
- It is not immediately obvious whether the remaining boundary conditions and constraints would be met.

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SOLUTION - 2

- i. Following are the factors that should be considered in designing this product by the Company:
- The Company should consider whether there is a unique market segment and/or customer need that this product will cater to.
 - In particular, the company should assess the size of this market to get a view of the additional top-line that this product will generate for the company
 - Further, the company should also consider whether this product will cannibalize the market for its existing products or not and factor the same into the net increase in the top-line of the company due to the addition of this product.
 - However given that the product is the first single premium product and is being sold through a new distribution channel, the cannibalization risk should be relatively low.
 - The impact of the product on the bottom-line of the Company should also be assess i.e. the product should meet the profitability criteria set up by the company in terms of new business margins or shareholder's IRR.
 - The Company should also ensure that the customer IRR being offered under this product is at least similar to that being offered by the competitors.
 - This is particularly important given that the product will be sold through the agency channel as opposed to the bank channel where the customer is relatively captive in nature.
 - Another reason which increases the importance of the above point is that the product is relatively simple in nature and hence can be easily comparable to other similar products
 - The Company may want to consider adding additional features into this product in order to serve the dual purpose of reducing its comparability and increasing its attractiveness.
 - However this may make the product more complicated for the distributors to sell and the customers to understand thereby affecting the marketability of the product
 - The Company should also consider the consistency of the customer IRR of this product relative to that of the regular premium product it currently sells
 - In general, the expectation of the customer would be that the IRR of this product should be higher given that it is a single premium where the reinvestment risk for the company is much lower as compared to the regular premium product.
 - In addition, the expenses associated with this product should also be lower as compared to the regular premium product thereby resulting in the customer segment demanding a better IRR.

- Finally, the agency channel is typically more competitive as compared to the bank channel due the captive nature of the customer base of the latter which will also mean that the customer IRR will be typically higher for this product as compared to the regular premium product.
- The Company should consider the risks associated with this product and assess whether the risks are acceptable to the Company or not.
 - Given that the product is the first single premium product launched by the Company and the first to be launched through the agency channel, it may want to keep sufficient margins within the premium to minimize the risk of mis-estimation of the pricing parameters
- Similarly the Company may want to reduce the level of investment guarantee being given within the product although this may have an adverse impact on the marketability of the product
- The Company should also ensure that the new business strain associated with the product is not very high. However this is unlikely to be the case as this is a single premium product where the new business strain is typically negative i.e. the product provides profits on day 1
- The Company should also consider putting in features that reduce the sensitivity of the profits under this contract to future experience.
 - For instance, the company may not offer any guaranteed surrender values under this contract as the same expose the company to losses on surrenders being higher than expected.
 - Further, if the Company is not offering any guaranteed surrender values, then it should consider how much surrender support should be given to the profitability of the product.
 - If the Company is banking on surrenders to achieve the profitability of the product, it risks the actual surrender experience being lower than expected thereby resulting in lower profits than expected.
 - While implementing the above features (e.g. not offering guaranteed surrender values etc.), the Company should also consider the potential adverse impact on the marketability of the product of doing so.
- The Company should also consider the changes in the administration systems that will have to be built in for administering this product and the costs associated with the same.
 - This is likely to be less of an issue for this product given that it is a simple single premium endowment and hence the ability of the system to cope with this product should be less of an issue.
- The Company should also consider the extent of cross subsidies within the product (e.g. between higher premium and lower premium policies) as well as between this product and other products that are sold by the company.

- Typically, introducing cross subsidies increase the risk of portfolio mix being different to expected but the presence of these cross subsidies allows the company to sell to a wider variety of customer segments thereby increasing top-line.
 - The Company should weigh the costs and benefits of introducing any cross subsidies before introducing these into this product.
 - The regulations relevant to the particular products or general regulations impacting this product should also be considered when designing this product.
 - Similarly any professional guidance or best practices recommendations provided by the relevant professional/industry bodies should also be kept in mind when designing this product.
 - Any relevant tax laws should also be considered especially if tax exemptions are one of the key reasons why customers would want to buy this product.
 - The company should consider all the above items both on its best estimate of future sales, but also if sales were markedly lower or markedly higher than the best estimate. Where possible the product design should be as insensitive as possible to sales volumes.
- ii. Following are the risks that selling this product through the tied agency channel might bring for the company as compared to selling the regular premium version of the same product through the bank.
- Since product is being sold through a new distribution channel, the mortality is expected to be different than that of the regular premium product sold through bank, hence the risk of mis-estimation of mortality experience exists while pricing the product.
 - For single premium products, the investment guarantee is the very important as it will be the key marketability driver especially with the tied agency channel, therefore there is a risk that the Company ends up offering very high guarantee which it cannot meet using the instruments available in the market
 - Even if such instruments are available, they may not be available for the same duration as the liability especially if the single premium product has a very long term exposing the company to reinvestment risk.
 - There is a risk that the cost of setting and administering the product turns out to be higher than originally expected during the pricing of the product thereby leading to lower profitability.
 - Similarly, the surrenders assumed within the pricing of the product may be too high or too low as compared to the actual experience thereby leading to lower profitability in either of the two scenarios depending upon how the product has been priced.

- There is a risk that the market segment that the company has envisaged for this product does not find the product attractive thereby leading to lower volumes for the product.
 - This will not only reduce the impact of the product on the bottom-line of the company in terms of lower profits but also reduce the extent to which the company can recoup the expenses incurred on the product.
 - On the other hand, the volumes of the product may turn out to be much higher than expected leading constraint on resources and capital although the latter is less of an issue here given the single premium nature of the product.
 - There is also the risk that the portfolio mix of the product turns out to be different than expected which may reduce the profitability of the product especially if cross subsidies have been built into the product pricing.
 - Since the company has never sold a single premium product, there is a risk that its systems and processes may not be able to cope with this product.
 - Given that the product is the first single premium product of the company and is also being sold through a new distribution channel, there is a risk that the same is subject to mis-selling especially if the commission on the product is attractive.
 - The regulator might object to the single premium version of the product especially if they feel that regular premium products achieve the overall objective of encouraging public to save on a regular basis in a much better way.
- iii. Following are the possible measures the company can put in place to prevent mis-selling of this new product.
- The company can introduce commission claw-back feature within the product by way of which part of commission will be clawed back if the policyholders surrender in the initial years.
 - The Company can have strict documentation requirements whereby the agent has to give details of the needs analysis that he/she has conducted for the customer and why he/she has recommended this product to them.
 - The Company can conduct mystery shopping trips to assess whether agents are selling policies to the right customers.
 - Similarly, the company's compliance team can conduct surprise visits to the agents' offices to check that the agent is not printing and distributing their own version of product features.
 - The Company can have strict appraisal criteria for agents such that if they are found to be mis-selling then strict action is taken against them.

- The company can have an effective training program for its agents to ensure that they understand the features of the product and are able to assess the needs of the customers before recommending the product to them.
- The company should have effective recruitment criteria in place for selecting agents so that any individual who has some history of mis-selling is not recruited by the company.
- The Company should provide effective sales aids to the agents so that they are able to explain the features of the products properly to the customers so as to reduce the chances of the customers buying this product if their situation does not require them to buy it.
- The company can make it mandatory for the customers to sign on the benefit illustration where a declaration from the customer is given that he has understood the product and is taking an informed decision.
- The company can initiate a welcome call for all its customers initially to check whether they have understood the product features.
- The company can introduce a Key feature document which covers the important features of the product along with the policy contract. The benefit of doing this is that customers are more likely to read a one page description of the product rather than go through the entire policy contract.

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SOLUTION - 3

i. Following are the risks involved in offering such an option to customers:

- The main risk in such an option is that policyholders may use this option at a time when it is most beneficial for them to do so e.g. when they are aware that their probability of dying is high.
 - This is particularly because the option can be exercised any time during the duration of the contract and can be exercised any number of times.
 - This will lead to the actual cost of the option becoming much higher than expected thereby causing reduction in the profitability of the product.
- Given the open ended nature of this option, the premium that the company might have to charge for such an option may be substantial thereby causing the overall premium of the product to be uncompetitive.
 - This may lead to a fall in the overall business of the company causing a reduction in profits and an increase in per-policy expenses.
 - This may also cause the company to only attract substandard lives causing an overall worsening in the mortality experience of the company.
- The introduction of the option may make the product much more complicated thereby causing a reduction in the attractiveness of the product leading to fall in new business volumes.
- On the other hand, if the option proves to be very popular among the policyholders, there is risk that the new business volumes rise significantly causing excessive strain on resources and capital.
- The competitors may react to such an option by introducing similar options at cheaper rates, again causing a fall in the new business volumes of the company.
- There may be specific regulations against the introduction of mortality options in general or at least on such open-ended mortality options.
- Even if such a regulation does not exist, the regulator may disapprove of the company offering such an open-ended option on the pretext of the option causing excess amount of risk to the company.
- The administration systems of the company may not be able to cope with such a complicated feature that may lead to errors in policy issuance and servicing. There is also the possibility that the option is not explained well by the distributors to the potential customers due to its complicated nature leading to those customers buying this product who did not require it.
 - This may increase the surrender rate under the contracts thereby reducing the ability of the company to recoup initial expenses and causing lower profitability.

Following are the possible conditions that can be added to the terms of the option to mitigate the mortality risks:

- Restrict the number of times an individual is allowed to exercise this option.
- Restrict the specific occasions on which this option can be exercised e.g. at every fifth policy anniversary.
- Allow the option to be exercised at any time but require the policyholder to disclose the reasons for the exercise of the option.
- Restrict the duration of the contract for which this option is available e.g. only in first 5 years.
- Restrict the availability of this option to only better class lives e.g. minimum SA.
- Limit the total additional sum insured that can be covered by options - i.e. options can be exercised until the sum insured is three times the original amount.
- Fix the exact amount of increase that will be available on exercise of option at any time during duration of contract.

ii. Following are the two methods of pricing mortality options together with their advantages and disadvantages to the insurance company:

North American Method

- The North American method requires two key assumptions to be made for it to be used to value mortality options:
 - A double decrement table for lives who have not yet exercised the option with decrements of death and exercising the option.
 - A mortality table for lives who have exercised the option.
- Using the above two assumptions the expected present value of benefits under the contract can be calculated which is split into two parts:
 - Part 1 relates to the expected present value of benefits prior to the time period at which the option can be exercised.
 - Part 2 relates to the expected present value of the benefits post the use of option for both the people who have exercised the option and those who have chosen not to do so.
 - Part 2 will depend upon the mortality of those exercising the option as well as the percentage of policyholders that are expected to exercise the option.
 - The mortality of those that do not exercise the option will be same as that used in Part 1 except that ultimate mortality will be used in this case instead of select mortality.

- Similar to the above calculation, the expected present value of premiums under the contract can be calculated.
- Subtracting the EPV of premiums from the EPV of benefits will give the EPV of the cost of providing the option under the contract.
- The main advantage of the using the North American method is that it allows more accurate calculation of the cost of the mortality option by making explicit assumptions of the proportion of customers expected to exercise the option as well as the mortality of those who exercise the option.
- This may allow the insurance company to reduce the prudence margin within the option premium thereby allowing it to offer the option to policyholders at cheaper rates.
- On the other hand, the main disadvantage of this method is that the data to derive the assumptions may not be easily available.
 - This might be particularly the case with companies or/and markets where such options are relatively new.

Conventional Method

- The conventional method requires the following simple assumptions to be made for it to be used to value mortality options:
 - Everyone who is eligible to exercise the option will do so.
 - The mortality experience of those who exercise the option will be equal to the ultimate version corresponding to the select experience which would have been used had underwriting been carried out.
- Using the above two assumptions the expected present value of benefits under the contract can be calculated which is split into two parts:
 - Part 1 relates to the expected present value of benefits prior to the time period at which the option can be exercised which is based on select experience.
 - Part 2 relates to the expected present value of the benefits post the use of option which is based on the ultimate experience.
 - Please note that unlike the NA method, no separate assumption regarding the mortality of those who do not exercise the option is needed as this method assumes that all eligible lives exercise the option.
 - Please note that Part 1 and 2 may be based on different mortality tables although usually the select and ultimate experience of the same mortality table is used.
- Similar to the above calculation, the expected present value of premiums under the contract can be calculated.

- Subtracting the EPV of premiums from the EPV of benefits will give the EPV of the cost of providing the option under the contract.
- The main advantage of the using the conventional method is that it is relatively easier to use as it does not require too many assumptions to be derived.
 - Thus, it can be easily used to derive the costs for simpler options where the Company may not wish to carry out the full scale detailed analysis needed for the NA method.
- On the other hand, the main disadvantage of this method is that it is not possible to use this method for complex options where a number of alternatives are available to policyholders.
 - Further, this method may lead to undercharging by the company especially when the mortality of those whose do not exercise the option is expected to be lighter than select.

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SOLUTION - 4

Revalorization method

- Under this method, the investment surplus on the policyholders' fund is distributed to all with-profits policies by means of an increase in reserves. i.e. The profit to be given to a particular contract is expressed as a percentage of that contract's supervisory reserve
- This increase in reserves is effected by means of an increase in benefit and an increase in premium by the same percentage or sometimes only increase in benefit with no increase in premium.
- The surplus may also be calculated to include a mortality and expense contribution, although such items may be considered as a reward for the insurance risks undertaken and hence be reasonably distributed entirely to the shareholders.
- The method treats all policies in the same way, and is formula driven (objective)
 - Thus no discretion in distribution of surplus and little smoothing of surpluses
 - Though it is simple to apply and present to policyholders.
- Little or no profit deferral occurs
 - Hence little investment freedom and discouraging investment in more volatile asset classes.

Contribution method

- The fundamental principle is that dividends are paid to individual policies in proportion to the policies' contribution to surplus
- The dividends may be built up by calculating the profits arising from mortality, interest or expense (or "loading") surplus.
- The surplus/dividends could be distributed by means of:
 - an addition to the guaranteed benefit
 - reduction in premium
 - cash back to policyholders
 - retention of surplus for eventual "terminal dividend" distribution on claim / maturity.
- The method is very equitable in terms of distributing surpluses among policyholders and it is complex to apply and present to policyholders compared to revalorisation method.
- The actual experience rates used to calculate these individual surplus contributions would be based on the experience of broadly homogeneous groups of policyholders.
- The total distributable surplus each year is determined by the company, so there is some discretion for smoothing of the profit distribution over time.

- The subdivision of the surplus between the homogeneous groups is mostly driven by a pre-set formula, which results in profits being distributed in proportion to the groups' contributions to that profit.
- Some judgment will be necessary in allocating any unusual sources of surplus to policies (eg from a large capital gain from property).
- The ability to invest in volatile assets such as equities and property would normally depend on the relative amount of terminal dividend being used.

Factors to consider

General factors

- Market experience – How developed the market is. Do people understand such methods of distributing surpluses? What kind of products is sold by competitors? Is there any demand for such products
- Policyholder's expectations - What are policyholder's expectation regarding with-profits policies and surplus distributions. Do they like immediate distribution or surplus or any deferral. If revalorization method is used with increasing premiums, would policyholders expect any increase in premiums
- Regulatory constraints - Are there any regulatory constraints in using these methods or any particular methodology for with-profits distribution. In particular, if revalorisation method is used, does the regulation allow to retain the insurance profit. Also, are there any regulations regarding how much surplus needs to distributed immediately and how much to retain. Are there any regulations regarding investments in assets related to with-profit policies
- How well the system is developed to implement any of these methodologies.
- The pricing actuary should also consider any taxation issues (the way policyholders and shareholders are taxed) and would any particular method be beneficial than another (either for policyholder or shareholder or both) from taxation point of view
- Should the pricing actuary also consider the addition to benefits approach as well

Specific factors

- The pricing actuary may consider a method which allows a delay in the distribution of any available profits in order to provide investment freedom and increased chance of remaining solvent. In such case, contribution method may be preferred over revalorization method.

- The pricing actuary may wish to consider an approach which enables her to smooth the release of surpluses/losses over time and again contribution method is preferred over revalorization method.

ii. Risk discount rate

- The risk discount rate is a number that is used as a criterion in profit testing.
- A key aspect of the risk discount rate will be the return required by the shareholders on the capital they invest in the insurance company.
- It is set to ensure that the rate of return from the product is satisfactory, given the inherent variability of the return and the required return on capital.
- The margin between the risk-free rate and the risk discount rate should attempt to reflect all sources of risk in the product. The risk discount rates used for pricing different products should reflect the relative risk of those products. The higher the risk, the higher the risk discount rate should be used.
- The following are among the factors in the product design that needs to be kept in mind from the point of view of determining the risk discount rate:
 - Any historical data
 - amount of guarantees
 - any policyholder options
 - overhead costs
 - market experience.
- Given that the company is entering into an untested market, probably it would like to keep a higher risk discount rate than it would have otherwise, to allow for the inexperience of market and lack of any historical data
- However, given a with-profits policy, the initial level of guarantees would be low and thus, the risk discount rate should reflect this.
- The pricing actuary also needs to keep in mind how much the distribution of surplus can be deferred so that guarantees are slowly built. Given a lower deferment of surplus under revalorization method, the actuary may choose to adopt a different risk discount rate for revalorization method compared to contribution method
- For the with-profits products, the actuary must consider the timing of the distribution of surplus to shareholders which equally plays an important role in determining profits and hence, may be allowed for while determining the risk discount rate

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SOLUTION -5

Before coming to any decision regarding use of new software or continue with existing one, the chief actuary need to consider, amongst other things, the following factors

- Cost consideration – how much is cost involved in shifting to the new actuarial software. How much is it one time and the maintenance cost. How does this cost compare to that of maintenance cost of existing software. Moreover, need to consider who is bearing the cost. Is it the group company or the local company
- Expertise – how much is the in-house expertise available for the new software. How much expertise is available in the local country. A judgment will be required based on resources available (whether in-house or in local country) to work on the new model
- Support – what level and amount of support is available from group company regarding migration to new software and future support. How much is the support available from the software company. Is there any local office of the software company. Will there be any initial training provided
- Migration of exiting products to the new software - Will this be done in-house by the local company or will any support will be provided. What type of reconciliation of embedded value results within both software will be acceptable.
- If there are any significant divergence in results between exiting and new model, how will that be reported
- If there is any interaction of the actuarial software with other IT systems and/or policy administration systems, how easy will it be to integrate the new software with the existing IT systems and/or policy administration systems
- Other factors related to the new model compared to current model
 - The complexity
 - The amount of time taken to produce results
 - The documentation available around the model
 - The easy with which changes can be made to the model – i.e. subsequent development and refinement
 - Are the results readily understood by model users
 - Are the results of the model capable of independent verification for reasonableness
 - How easy it is to perform sensitivity analysis
 - Any enhanced features in the model (e.g. stochastic simulation or modeling options) or any limitations compared to existing model

- The actuary also needs to consider the long-term impacts if she decides to continue with the existing model. If there was any support provided by the group company, would it continue to do so.
- Also, how many companies in other countries are planning (or have taken a decision) to retain the existing model.

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SOLUTION -6

- The magnitude of impact to the company will depend on how dependent the company is on the banks as distribution channel and how many banks it is currently tied to.
- Since majority of the business is written through banks, the company will be impacted to an extent.
- The company needs to have a broad idea about the time frame allowed for the proposed new guidelines to be implemented.
 - This will affect the decision to be taken and the course of action.
- The company would also like to know the reaction of competitors to the proposed regulations

- If the company's market share in the banc assurance channel is low, then there is potential for the company to increase its market share.
- If it is the reverse, then the company will have to prepare for competition.
- This may not be a big problem as the company would have outbid its competitors in the past to partner with the banks every two years.
- However the level of competition will be different now. It will change from a corporate bidding every two years to a retail competition on a daily basis.
- The employees of the insurance companies will have to work very closely with the staff of the bank branches to ensure that they get the biggest pie of the business.
- The insurance company will have to closely track the competitors and will have to continuously try to be ahead of the curve.
- Since life insurance is a push product, the strategy will be more to please the distributor than the end customer.
- The company will now be continuously compared with the competitors on the following aspects:
 - Competitiveness of the products
 - Innovation in product design
 - Underwriting standards
 - Customer service
 - Turnaround times for all request made by prospective customers and distributors.
 - On ground support provided to the bank staff
 - Claim repudiation data

- The company has so far sold only unit linked products and if the competitors offer all variety of products then they may be forced to follow.
- They may have limited capability in designing products on conventional platform or other complex products and this may impact business.
- If they plan to design and sell any with-profits products, they may not have a bonus declaration history which will create difficulties at the time of sale.
- To avoid this issue, they may revert to providing higher guarantees but that will come at a cost.

- The expense model of the company will be different under open architecture and the company may have to review its fixed expenses.
- The company will try to minimize the fixed expenses in order to keep aside the maximum amount to pay in terms of commission and rewards and recognition.
- The company may pay advance money or commission to banks to outbid its competitors
 - However, it may try to agree on certain commitments from the banks in return of a sum of money paid in advance.
 - This strategy could de-risk them from unanticipated lower business.
 - However they would need to introduce clauses which ensure that they can claw back the money if the business commitment is not met.
- The company may need to explore alternative distribution channels like direct sales force, independent advisor direct marketing etc.
- However, before taking any decision on new distribution channel, the company would need to bear in mind
 - the costs involved,
 - changes in any target market,
 - changes the average premium size,
 - may need to re-design and/or re-price existing products or bring new products altogether

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