Actuarial Society of India

Examinations

November 2006

CA12 –Liabilities and Asset-Liability Management

Indicative Solution

Question 1
Indicative Solution

? The level of benefits that the company's policyholders receive.
? The level of premium charged to the company's new and existing policyholders.
? The level of dividend that the shareholders of the insurance company receive.
? The volume of new business that the company can write.
? The level of taxes that the Government receives on profit earned by the company.
? Other insurance companies competing in the same market.
? Reinsurance companies through the level of reinsurance business that the company requires.
? The employees of the insurance company through the employment benefits they receive.
? Job security for the employees of the insurance company.
? The work of the regulatory authorities that monitor the insurance company.
? Other insurance companies who may be required by legislation to contribute to a compensation scheme that pays benefits to the policyholder of insurance companies that fail.
? Employed sales staff and independent intermediaries.

[9]

Question 2
Indicative Solution

Retirement benefit is likely to be the most significant issue, but the same considerations apply for pension on death or ill-health.

The State can provide benefits directly to individuals. This could either be to all in the population/workforce (universal benefits) or only to those without adequate other sources of benefit (means-tested benefits).

The State can educate people about the need to make adequate provision for themselves, if State benefits will not be adequate on their own.

The State can encourage or compel individuals (or their employers) to make relevant provision. Encouragement could take the form of financial incentives or tax concessions.

The State may restrict the level of incentives to avoid subsidising individuals who already have adequate provision.

Compulsion could take the form of either a minimum level of benefit or minimum contributions, the cost being shared by employer/employee.

The State can regulate private benefit arrangements to ensure that those arrangements deliver adequate levels.

? requiring benefit promises to be funded in advance of retirement
? requiring regular checks that the schemes have sufficient assets

- ? requiring guarantees if a scheme cannot deliver its promises: e.g. insurance or a levy
- ? restricting the types of investments that schemes hold
- ? requiring scheme mangers/administrators/trustees to be authorised
- ? restricting the way benefit schemes are marketed
- ? requiring schemes to give regular information to members
- ? restricting the charges that managers can deduct from the fund
- ? restricting the types of benefit, such as imposing vesting for employees who leave service before retirement age.

[7]

Question 3(a)
Indicative solution
Issuing sufficient and relevant information would allow members to judge whether the Scheme was being run on a sound financial basis and in accordance with the trust deed and scheme rules and that robust administrative procedures were in place.
It may provide an early warning system to alert members to potential problems.
Members may then put pressure on the scheme sponsors, trustees or regulators to ensure that any problems are quickly rectified.
Alternatively members may choose to take a transfer value of accrued benefits if they feel that the security is inadequate.

[3]

Question 3(b)
Indicative Solution
Key Information

- ? Actuarial Valuations & a statement of funding principles
- ? Annual Report & accounts from trustees
- ? including contribution obligations & investment strategy
- ? Individual member benefit entitlement & options

Other sensible suggestions are acceptable

Advantages:

- ? Aids understanding of
  - o Funding objectives & Investment issues
  - o Promised benefits and the options available (e.g. transfer / early retirement etc.)
- ? to give confidence that the Scheme is being run satisfactorily
- ? May alert members to potential problems / concerns

Disadvantages:

- ? The information may be incomprehensible to many members
- ? Members lack of interest
- ? Too much information information over load

- ? May frighten members unnecessarily & result in inappropriate action (e.g. leaving scheme)
- ? May create false / unreasonable member expectations
- ? Adds to administrative expenses

[6]
[9]

Question 4
Indicative Solution
Information could be entered onto the wrong claim record.
The claim and policy numbers should both be in series that mistakes are difficult to make — a single digit wrong or two numbers swapped will give an invalid number, and it should not be possible for a policy number also to be a claim number.

Incorrect amounts may be entered, or correct amounts in the wrong currency.
There should be some check on amounts. Very large or small claims should be queried if entered. This is especially important if working in a variety of currencies. A query should be raised if an amount is entered in a different currency from previous entries. A query should be raised if the claim is not in the currency of the country of the address of the policyholder (this will not apply for marine insurance, travel insurance and some other classes).

A claim may be entered for an incorrect date.
The system should automatically check that the policy was on-risk on the day when the claim occurred. A query should be raised if there is a very long gap between the date of loss (or reporting to the insured) and reporting to the insurer, or if the date of loss was later than the date reported.

Information may be entered against the wrong policy.
Other details, such as policyholder surname, deductible, and the fact that paid + estimated outstanding < sum insured, should be checked against the information on the policy record.

Information may be missed out.
A claim should not be accepted until all fields have been filled in, possibly with null entries.

[5]

Question 5
Indicative Solution
There should be a clearly worked out master strategy document and a comprehensive master schedule for the project.

The written strategy for the project should set out:

- ? the aims of the project

- ? the issues necessary for the implementation of the project
- ? the areas of risk that could affect the viability of the project
- ? alternative strategies for dealing with the areas of risk.

The written strategy would usually include the following:

- ? a clear identification of the objectives of the project
- ? statements on how these objectives will be met
- ? the acceptable quality standards for meeting the objectives
- ? the project sponsor's role
- ? the role of any third parties eg. consultants
- ? the financial and economic objectives
- ? details of the expected cost of the project
- ? the financing policy
- ? the policy for dealing with legal issues
- ? the need for insurance or reinsurance
- ? the technical policy
- ? a structured breakdown of the work to be completed under the project
- ? the key milestones for reviewing the project
- ? the risk management policy
- ? the communications policy
- ? the information technology policy.

Once the strategy and objectives have been written and the objectives of the project have been set, a development schedule is needed setting out how and when the project will be undertaken.

The master schedule for the project ensures that the right people do the right things at the right time. The right people include both those internal to the project and external suppliers.

The written strategy should be shared with the key individuals who will bear the responsibility for implementation of the project. It will be necessary to review the development schedule at regular intervals and particularly when key milestones in the schedule are reached.

[9]

Question 6(a)
Indicative Solution
<u>General</u>
The company will have no brand or reputation in this particular market segment.

The company may experience lower levels of new business of its current whole life contracts.

This type of contract will require considerable capital, and so the company's solvency position is vulnerable to writing significant volumes of new business.

In this case there is also a risk that the admin systems won't be able to administer the business efficiently or correctly if they are not developed appropriately.

Mortality/Morbidity rates
The company will have no directly relevant data of its own for the purposes of calculating its mortality/morbidity experience for use in setting rates so there is more risk that the assumption will be wrong.

There is a risk that the emerging experience is worse than that assumed in the pricing basis due to the current experience or the future trends in experience being different from those assumed. The future trends are a particular risk for CI business where claims will be affected by future changes in medical treatments or diagnostic techniques that are very difficult to predict.

If the premiums are guaranteed for the term of the contract, any adjustments required as a result of emerging experience may only be made in respect of new business.

Anti-selection is a particular risk with CI policies so there is a need to design the proposal form carefully; again there is no past experience.

Badly worded claims definitions in policy document may lead to accepting claims that not allowed for in pricing assumptions; or bad publicity from turning down contentious claims, leading to reduced new business or higher lapses.

If society becomes more litigious, this may lead to more CI claims than anticipated.

A new disease may emerge which is not covered but which is significant for policyholders and where there is significant public pressure to admit claims.

There is an underwriting risk in that lives may not be charged a premium appropriate to their level of risk due to a lack of experience in underwriting this business. There is also a risk that the approach taken by the underwriters is not consistent with that assumed in the pricing assumptions. This is particularly true as there is no own data for experience assumptions, which would reflect the underwriting approach.

Expenses
It is possible that the administration of this product may introduce some new functions (e.g. underwriting), so that per policy costs may be higher than for its existing product lines. The company will have no experience of its own on the likely cost of these. Conversely, there may be some current functions that would not be needed for the new product (e.g. unit pricing) that would reduce per policy processing costs. There will therefore be considerable uncertainty as to the level of per policy expense that should be loaded into the premium rate calculations.

There will be some system development and staff training costs, which will only be recouped if sufficient volumes of business are sold.

Given it is a new product, future new business volumes will be uncertain making the expense per policy uncertain even if total expenses can be estimated accurately. If the pricing basis involves cross-subsidies, there is a business mix risk as well.

There is a risk that inadequate allowance will be made for expense inflation.

Withdrawals
If company's rates are undercut, then there may be early lapses that cause a financial loss to the company since high initial expenses will not have been recouped. There is also a possibility of selective withdrawals, leaving a portfolio in less than expected good health.

[10]

Question 6(b)
Indicative Solution
General
The company should undertake sufficient market research to establish that there is demand for this product, and that it would be regarded as a credible product provider.

The company should model the capital it requires for a variety of different new business assumptions if it is able to get additional capital from a parent. Alternatively, it could consider reinsurance finance.

Mortality/morbidity rates
It is likely that the company will want to reinsure a considerable proportion of the risk so that the reinsurer's rates will form a starting point for the company. Alternatively, it may use industry standard tables (if any exist) as a starting point.

It can reduce its exposure to claims volatility by appropriate reinsurance, or by imposing stricter underwriting requirements (both at commencement and on claim).

Limit the critical illnesses covered to the standard definitions used by other companies.

Expenses
There is little alternative but to attempt to analyse expenses by function as far as possible and attempt to identify which of these functions, and hence costs would be incurred in administering the new product classes.

Estimates for any new functions using whatever market salary data may be available, as salary costs are likely to form the majority of the company's expenses. Out-sourcing administration may be considered on a fee per plan basis, which reduces the risk to the company that per policy expense estimates are wrong.

The company could consider a packaged administration system as an alternative to in-house development to reduce the risk of costs exceeding estimates.

Withdrawals
The company may try to mitigate the extent of any loss on early termination by lengthening commission earnings periods. This may not be possible depending on market norms.

Alternatively, the contracts may be designed to include attractive options that are perceived as adding value to reduce the threat of early exit. E.g. an option to increase cover on specified events with no further underwriting

The company may simultaneously review its charges on its current business to remove or reduce any incentive to lapse.

[7]
[17]

Question 7(a)
Indicative Solution

? one possibility is to pay claims made by beneficiaries when they arise
? so that no monies are put aside to fund for the claims
? although the company may wish to establish a book reserve
? this method has minimal cash outflow initially
? although the cashflow will increase greatly later on when eligible employees have retired
? and it is possible that the company may not have the resources to meet the cashflow at this time
? so that there is little security of the benefit for the member
? a variant of this approach is to pay annual insurance premiums as they arise during the retirement of the member

? a second possibility is to establish a fund at the retirement of a member
? either by means of a capital payment at that time
? or by a series of payments for a number of years after retirement
? the fund would be calculated to be sufficient to meet the cost of claims/insurance premiums during the eligible period after retirement
? assumptions will therefore be required in a number of areas including medical insurance price inflation, investment returns and the
? mortality rates for members
? medical insurance price inflation can be determined using historic trends
? and the investment return needs to allow for the appropriate tax treatment of the fund

- ? this approach also has minimal cash outflow at the outset
- ? although potentially large capital payments will be required when members start retiring
- ? during the course of the scheme the adequacy of the fund will need to be monitored
- ? and adjustments made either by means of further payments or offsetting against future retirement payments (if there is a surplus)

- ? the final possibility is to establish a fund over the working lifetime of the member
- ? which is calculated to be sufficient at the retirement age to meet subsequent costs
- ? although if the member retires early, the actual fund will be inadequate and will require further payments
- ? again assumptions will be required to determine the size of the necessary fund at retirement
- ? and the contributions necessary to achieve this fund
- ? which will also need to be monitored for their adequacy on a regular basis

[12]

Question 7(b)
Indicative Solution

- ? this final approach is the preferred approach
- ? because the cost is paid at the same time as the employee is providing services to the company
- ? and if the fund is adequate there will be no need for further payments after the employee has left the service of the company
- ? and there is security of accrued benefits for the members

(but give appropriate marks for well reasoned alternative)

[2]
[14]

Question 8(a)
Indicative Solution

The company will either make a profit or loss on withdrawal depending on a number of factors:

- ? Duration in force — the number of premiums paid reflects the cash available to pay for expenses and commission.
- ? Expense and commission levels — profits or loss on withdrawal will depend on the structure of the commission and the costs involved in setting the product up.
- ? Product charging and surrender structure — different charging levels, premium levels and/or surrender scales can influence profits or loss.
- ? It is important that the company uses withdrawal rates which reflect their own experience as closely as possible.

- ? If not, they may design a product which is structured in such a way that the company will make larger losses (or profits) than allowed for in any portfolio profit testing.
- ? The competitiveness of the product will likewise be affected.

[4]

Question 8(b)
Indicative Solution

Factors that will influence the withdrawal rates of one company compared to the industry average are as follows:

- ? Selling methods: withdrawal rates will differ if products are sold through brokers, bancassurance, direct sales force, tied agents or direct marketing.
- ? Area where products are sold: Economic conditions in various parts of the country can differ to some extent. This can have some influence on withdrawal rates, e.g. booming house sales (mortgage business), industry closures.
- ? Surrender scales: plans with more favourable surrender scales may be surrendered at a higher rate than plans with higher surrender penalties.
- ? Plans with guaranteed surrender scales will have different lapse rates than others.
- ? Investment performance: the performance of an office's funds (or bonus rates) may influence the rate of withdrawal.
- ? Quality of Servicing: companies with high levels of servicing and follow up visits etc. may expect a better experience than others.
- ? Remuneration for sales staff: incentive schemes to keep business in force can influence lapse rates, offices differ in this practice.
- ? Other reasons are:
    - o Data may not be available.
    - o Industry statistics are limited, are often out-of-date and not necessarily reliable.
    - o Different products have different experience — industry statistics may reflect a mix of heterogeneous products.

[6]
[10]

Question 9(a)
Indicative Solution

The main reasons for analysing the surplus or deficit arising between successive valuations of a benefit scheme are:

- ? To identify the most significant sources of profit/loss and so review the risk of operating the scheme.
- ? To review the assessed cost of new benefit accrual.
- ? To check both the valuation assumptions and the method.
- ? As an independent check on the valuation results and data.
- ? To help formulate decisions about how to deal with any surplus or deficits that has arisen.

- ? To assess the performance of trustees and managers.
- ? To provide detailed information for disclosure to shareholders of the sponsoring employer.
- ? To monitor trends in experience to assist in corrective action (actuarial control cycle).
- ? A requirement of legislation or professional guidance.

[4]

Question 9(b)
Indicative Solution

- ? The aim is to establish a model that compares the actual experience since the last valuation with what was expected if all assumptions had been borne out.
- ? The starting point is the results of the last valuation, therefore need full details of the assumptions made last time.
- ? Obtain data on what has happened since then
  - o ... cashflows contributions/premiums, benefits paid, expenses
  - o ... investment returns capital movements and investment income
  - o ... membership movements
  - o ... salary/benefit increases
- ? Consider changes in benefits provided by scheme, contribution rates, etc.
- ? Compare actual against expected for each item separately.
- ? Consider whether the experience has been typical. Is there sufficient data for it to be statistically significant?
- ? Analyse the effect of any change of basis.

[5]
[9]

Question 10
Indicative Solution

- ? Lack of previous experience
- ? Variability of experience
- ? Changing types of business
- ? Changing risk characteristics
- ? Anti-selection by policyholders
- ? Changing attitudes to claiming
- ? Climate effects
- ? Catastrophes
- ? Exchange rate movements
- ? Latent claims
- ? New types of claim
- ? Claims inflation
- ? Legislative changes
- ? Judicial changes

- ? Poor management
- ? Poor underwriting

[6]

Question 11(a)
Indicative Solution
If a benefit scheme is being discontinued, the following options exist for the provision of the outstanding benefit payments:

- ? Continuation of the scheme without any further accrual of benefits
- ? Transfer of the liabilities to another scheme with the same sponsor
- ? Transfer of funds to the beneficiary to extinguish the liability. Legislation may not allow an individual to receive the capital value of their benefits. However, an alternative may exist that allows the individual to place the funds with an appropriate insurance company or in the scheme of any new employer.
- ? Transfer of the funds to an insurance company to invest and provide a benefit.

[2]

Question 11(b)
Indicative Solution
Where benefits are transferred to a third party such as another scheme or an insurance company, the ultimate benefit will depend on the future experience of that individual and the assumptions used to capitalise the benefits. The benefits may therefore be greater or smaller than the discontinuance benefit.

An alternative may be to transfer the liabilities to a provider who will guarantee to pay a specified level of benefits. The provider will then accept the risks of future experience. However, there will be risks for the provider in guaranteeing the benefits, for which they will charge a premium. As a result the balance of funds may not be sufficient to provide the benefits that could have been targeted using one of the other forms of provision described above.

[3]
[5]

****