

EXAMINATIONS

April 2001

Subject 402 — UK Fellowship Life Insurance

Paper Two

EXAMINERS' REPORT

1 *Question 1 was a relatively straightforward question covering reasonably familiar material and was generally answered well. Solutions to part (i) were typically of a good standard. Candidates also scored well on the first three items in part (ii). However, few candidates picked up many marks on the fourth item, particularly in respect of information not of an actuarial nature. The descriptions given of the embedded value in part (iii) were reasonably comprehensive. However, the answers to part (iv) tended to be superficial.*

(i) Advantages of purchasing Co C

It may be difficult to obtain a licence to start a new company in this particular country. It may also be harder for a foreign company than a local company to sell business.

Starting from scratch may be made more difficult by language or cultural barriers.

Gain experienced staff who understand the regulatory and taxation environment.

Staff are already trained in the type of products sold in this country.

No need to recruit staff which can be costly and time-consuming.

Have existing infrastructure, e.g. company properties.

Have existing systems: administration, accounting, valuation.

Can sell new business immediately.

May be a cheaper option, depending on sale price.

May be able to continue using the existing brand which already has a market reputation. Also it would probably be difficult to sell with profit business if a new co.

Have existing client base and salesforce or relationships with agents.

Have past experience analyses which can use as part of actuarial control cycle to set assumptions for future pricing.

Gain an immediate investment performance track record.

Disadvantages of purchasing Co C

Why is Co B selling?

Co C's market reputation may be bad.

The purchase price may be over-inflated, for example in a bidding war or auction.

Co A may wish to sell different types of product than those currently being offered, and the conversion would therefore still take time and money to achieve.

Co C might not adapt easily to Co A's internal culture.

May have to put in place measures to ensure that key staff do not leave on change of ownership.

There may be elements of Co C that are not attractive, e.g. the distribution method.

Have to find more initial capital to finance the purchase than if grew organically.

Co C may have dependencies on Co B for some services, e.g. investment.

There may be legacy problems with Co C's business — this covered by indemnities but still a drain on management time and a potential reputational risk.

(ii)

Product and New Business Details

In-force business data by age, term, premium etc

Descriptions of products sold

Charging structures of products sold

Details of product guarantees and options

Marketing literature

Historic new business sales by class of product

Planned new business volumes by class of product

Also split by distribution channel

And if possible by individual salesperson / agent

Profile of new business (age / term / average premium)

Profitability of new business

Profit testing bases

Experience Analyses and Bonus Distribution

Historic expense analyses

Future expense budgets

Details of commission / salesforce remuneration arrangements

Persistency analysis

Morbidity analysis

- Mortality analysis
- Investment performance and investment manager's track record
- Details of approach to asset/liability matching
- Current tax position
- Projected future tax position
- Details of historic bonus declarations
- Bonus recommendation reports
- Results of investigations into supportability of bonus levels
- Asset share methodology
- Aggregate and individual asset share results
- Comparison of current payouts against asset share

Financial Reports

- Published accounts
- Regulatory returns
- Significant events which have occurred since the publication of the most recent accounts and returns
- Results of internal valuations (e.g. embedded value)
- Projected balance sheets and profits
- Analysis of surplus / profits
- Details of tax position
- Financial condition reports (or equivalent)
- For all reports: go back at least two years
- Details of assets

Other Information

- Details of any reinsurance arrangements
- Details of any financing arrangements (e.g. from Co B to Co C)
- Internal audit reports e.g. on data integrity
- External audit reports
- Correspondence with the regulatory authorities
- Details of any significant provisions e.g. policyholder compensation
- Details of any sales complaints
- Details of current and potential future litigation
- Board minutes
- Details of senior management / staff numbers / salesforce
- Employment contract details
- Details of staff pension fund
- Reasons for the sale
- Any analysts' or rating agency reports
- Systems information

- (iii) Determine a set of assumptions on a realistic basis.

Assumptions will include investment returns, tax, mortality, maintenance expenses, withdrawals.

Use experience analyses provided by Co C.

Adjust for any one-offs which may have distorted past experience or where future trends are likely to be different.

Either use a full set of in-force data provided by Co C or use what information has been provided to set appropriate model points.

For the without profits business, project forward cashflows and supervisory reserves to determine surpluses arising each year.
For the with profits business, need to project future bonuses.

If current reversionary bonus is unsupportable on realistic assumptions, could assume it is gradually reduced from its present level to that sustainable in the longer term.

Project forward earned asset shares and assume that terminal bonus rates are set such that payouts are equal to asset shares at maturity.

In the asset share calculation allow for the contribution from the surpluses arising on without profits business and for shareholder transfers.

Can then determine the cost of bonus in each future year.

The shareholder's share of profit is 25% of the cost of bonus.

Net down for taxation on shareholder profits.

The shareholder's net profit entitlement is then discounted to the present at the risk discount rate.

The risk discount rate depends on the return required by Co A shareholders.

This may depend on the method by which the takeover will be financed.

To this value should be added an amount in respect of any free estate in Co C.

Allow for any liabilities e.g. deferred tax on capital gains, cost of mis-selling compensation.

It may be assumed that 20% of the estate can be attributed to shareholders immediately.

Or alternatively the terminal bonus rates could be increased by allowing the free estate to augment asset shares.

The latter is a more realistic approach as it is likely to be the case that any free estate will be required as ongoing working capital within Co C.

Finally, add the value of net assets in the shareholder fund.

This could be discounted to reflect that these assets are not immediately distributable.

- (iv) Price will be based on the appraisal value, which is the sum of the embedded value and the value of new business or “goodwill”, therefore also need to calculate value of new business.

Need projections of sales volumes, based on Co C plans and own knowledge of the market.

Model the profitability of new business using cashflow projections as for the embedded value calculations.

Alternatively use simpler method of a multiple of profit arising on last year's new business.

A suitable multiple will depend on the prospects for new business growth in this country and using this distribution method. So include an assessment of the market for insurance in the territory and of Co C's competitors.

May use a higher risk discount rate to determine value of new business than did for in-force business since there are additional unknowns.

If use new business profitability information provided by Co C then need to take care that the assumptions are appropriate — could be aggressive to raise the price.

Take into account any possible reduction in future profit margins e.g. due to legislative changes or increased competition.

Might also include:

Sensitivity testing of the embedded value and value of new business.

Identification of potential risks and areas of concern (e.g. current or future litigation).

Suggestions for ways in which these could be addressed, for example Co B could provide indemnities.

Commentary on the “real” reasons why Co C might be up for sale.

Reputation of Co C.

Analysis of the management team and their contracts.

Identification of synergies between Cos A and C.

The value of any possible expense savings post-transaction and the cost of introducing any new proposed products

Dependencies of Co C upon Co B and how these could be addressed.
General commentary on the life insurance industry in the overseas country.

Including regulatory requirements and likely future developments.

Suggested options for the way in which the purchase could be financed.

Tax issues which might arise.

Suggested options for the company structure post-transaction.
For example, Co A shareholders could purchase from Co C with profits policyholders the surpluses arising on without profits business.

Impact of the purchase on the results of Co A.

Particularly its financial strength or solvency position.
Projected future post-transaction statutory and embedded value profits.

Analysis of the amount of capital which may be required to be injected into Co C, e.g. to continue to support current bonus rates, maintain or enhance investment freedom, or to support the planned level of new business which Co A wishes to write.

Recent history of prices paid for similar companies including analysis of the goodwill multiplier.

Market value of similar quoted companies if available.

Suggestions for ways in which Co A could win the deal. For example if Co C is for sale in a public auction, could identify the benefits and advantages of Co A compared with the other potential bidders.

- 2** *The solutions to question 2 were generally disappointing. In particular, most of the responses to part (i) failed to address the issues in much depth. Overall, the answers given to part (ii) were better, with candidates identifying at least the most significant advantages and disadvantages of each option.*

(i) **Option A**

This approach introduces a maturity guarantee into the contract.

The cost is represented by the excess of the mortgage over the maturity proceeds from the policy.

It will depend principally on future investment returns.

And also on other items of experience, such as the expenses and withdrawal rates under the policies concerned.

In addition, the comparison between the past returns earned on the with profits fund and the return required from outset to repay the mortgage is important — the further past returns are behind the target return, the more likely shortfalls are to arise.

The range of possible costs is likely to be large.

However, it will not be as great as for a maturity guarantee under a typical unit-linked policy, because of the greater stability of with profits pay-outs.

An element will simply form part of the normal cost of smoothing under with profits contracts, an additional cost arising only if the smoothed as well as the unsmoothed asset share lies below the mortgage.

Similarly, under some of the more extreme investment scenarios, part of the cost might otherwise be met from the existing guarantees underlying the policies.

A stochastic model should be used to estimate the cost.

This involves projecting the policies concerned to maturity under a large number of randomly-generated scenarios and comparing the maturity proceeds with the mortgage.

Allowance should be made for the existing policy guarantees and for the company's normal smoothing policy when determining the projected maturity values.

Where the mortgage exceeds the maturity value, the excess is discounted back to the current date and totalled across all policies.

The expected cost is then given by the average total cost.

The results will also give an indication of the variability of the cost, including its level under some of the more extreme investment conditions.

The projection will require assumptions to be made about items of experience other than future investment returns, such as withdrawal rates.

These are likely to be included in the model on a deterministic basis.

The impact on the various items of experience of introducing the guarantee should be considered — for example, policyholders may be less likely to surrender.

The sensitivity of the cost to changes in the other items of experience should be examined.

As well as incurring an actual cost from lifting maturity values up to the mortgage, the company will have to set aside capital to meet the additional guarantee.

The amount of capital required will be derived using a stochastic method with a suitably low probability of ruin.

Whilst the projected cost of the guarantee may be low, the capital required to support it could be much higher.

The company will incur the cost of having to set the capital aside. This will depend not only on the level of the guarantee, but also on the outstanding term of the policies.

The longer the term to maturity, the longer the period during which the additional capital will be required.

The likely amount of capital required, both now and in the future, should be ascertained, before it is agreed to proceed.

It might be possible to meet this from the aggregate asset shares under the contracts concerned, or it might be necessary to draw part of it from the estate.

Option B

This approach is similar in nature to the first approach, but provides an upper bound to the cost.

The maximum cost is limited to the shortfall that would arise if the company earned a future net return on its with profits fund of 6% p.a.

This avoids the high costs under the more extreme investment scenarios and hence results in a much narrower range of costs.

There may be no possibility of a cost arising under a significant number of policies — those that require a future investment return below 6% p.a. to repay the mortgage.

The maximum cost can be estimated deterministically by projecting the policies concerned to maturity assuming a net investment return of 6% p.a.

Where the mortgage exceeds the maturity value, the excess is discounted back to the current date and totalled across all policies.

The only uncertainty surrounds items of experience such as future withdrawal rates.

If the maximum cost is sufficiently high, it may be desirable to calculate the best-estimate cost using a stochastic method, as for the first approach.

It may be necessary to set capital aside to meet this conditional guarantee.

However, this is likely to be considerably lower than for the first approach, because of the absence of the more extreme costs.

Again, this should be investigated.

Option C

This approach crystallises the cost immediately, removing any future uncertainty.

The cost appears to be the enhancement made to the surrender value of the policy.

However, an actual cost will arise only if the total payment exceeds the asset share underlying the policy.

At most policy durations, the asset share is likely to lie above the surrender value, so the cost will probably be lower than it appears.

However, there will be an additional cost from policyholders who would have surrendered anyway — here, the excess of the asset share over the surrender value would otherwise have been left behind in the with profits fund.

In addition, the asset share may lie below the surrender value at short durations.

Here, the cost will be higher than it appears — effectively, the company is unable to recover the initial costs incurred under the policy.

This will be particularly significant if a large number of policies have been written recently.

Where the payment exceeds the statutory reserves held in respect of the policy, the company's free assets will be depleted — even if there is no actual cost.

This might be particularly significant if the company has a large portfolio of mature business, making a substantial contribution to the free assets.

In the extreme, the free assets could be so depleted that a change is required to the investment policy of the with profits fund.

Large numbers of surrenders would leave a lower residual in force portfolio, reducing the extent to which overheads are spread.

The payment would be compared with the underlying asset share, to estimate the cost.

And with the statutory reserves, to estimate the impact on the free assets.

The payment would be set to a minimum of the normal surrender value, as the company will not pay an amount below this level.

Where the payment lies below the asset share or statutory reserves, credit would be taken for the surplus.

The comparison could be performed for a limited number of model points representing the portfolio, with the results multiplied by appropriate weights.

Alternatively, with modern PCs, it may be practical to perform the exercise at an individual policy level.

The financial impact on the company will depend on the profile of its mortgage-related business and on the proportion of policies at different durations that are surrendered.

The latter will have to be estimated.

(ii) **Option A**

Advantages

Eliminates risk of shortfall, while retaining full upside potential.

Will be popular with policyholders.

Gives them what they may have believed they were buying.

Positive PR likely.

Easy to implement and operate administratively.

Disadvantages

Cost uncertain.

Could be very high in the more extreme investment scenarios.

Large amount of capital could be required to support guarantee.

Stochastic model will have to be built to calculate statutory reserves.

Option B

Advantages

Reduces the return required to repay mortgage down to more reasonable level.

Avoids showing a shortfall at projection rates above 6%.

May merely formalise what the company was intending to do informally.

Avoids risk to company of large losses.

And hence reduces the capital support required.

Disadvantages

Policyholders still exposed to potentially large shortfalls.

More difficult to understand.

Hence, may lead to arguments if there is a shortfall at maturity.

Particularly as policyholders are unable to verify the returns on with profits fund.

Complicated to operate at maturity if returns have been below 6% p.a.

Option C

Advantages

Removes risk of shortfall for policyholders.

Cost to company incurred immediately, so avoids future uncertainty.

Payment effectively assumes a future return net of tax and expenses equal to the current mortgage interest rate.

Hence, cost is unlikely to be excessive.

Disadvantages

Policyholders lose any upside potential.

Complicated and hence expensive to implement.

Difficult to obtain details to calculate payment.

Policyholders have to decide whether to switch to a repayment basis.

Surrendering the policy may not be appropriate.

Hence, the company may wish to offer advice, which increases costs.

Need to address the question of life cover.

Depletes the company's free assets.

Reduces the in force portfolio and hence the ability to spread overheads.

Still problem of policyholders who retain their policies.

Though company has a defence having made the offer.

Will break relationship with some clients

Not all mortgage providers may permit a reduction in the mortgage amount.