

# **EXAMINATIONS**

April 2003

**Subject 402 — UK Fellowship Life Insurance**

**Paper One**

## **EXAMINERS' REPORT**

### **Introduction**

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The examiners are mindful that a number of interpretations may be drawn from the syllabus and Core Reading. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

The report does not attempt to offer a specimen solution for each question — that is, a solution that a well prepared candidate might have produced in the time allowed. For most questions substantially more detail is given than would normally be necessary to obtain a clear pass. There can also be valid alternatives which would gain equal marks.

Mrs J Curtis  
Chairman of the Board of Examiners

17 June 2003

- 1** The basis used to calculate unit prices will depend on whether the company is a net allocator or redeemer of units. There is a risk that the pricing of units does not reflect a change in the company's position via a change in the pricing basis.

There is a further risk relating to the allowance made in the pricing of BLAGAB contracts for tax on unrealised gains. This involves assumptions about future realisations of assets. The actual tax incurred in future may differ from that charged to the linked funds.

The systems may hold out of date or inaccurate information e.g. on asset values or accrued income. For some funds, e.g. property funds, the company may find it difficult to value the underlying assets, which may lead to the assets being mis-priced or out of date market values being used.

Because errors in the calculation of the price at which units are created or cancelled may occur, for the reasons listed above, there is a risk that policyholders may not be treated equitably and their reasonable expectations may not be met.

There is also a risk that errors may also be made in the calculation of the price at which units are allocated or de-allocated, leading to policyholder inequity. Policyholders may also not be treated equitably if the way in which compensation for errors or inequities of material size is determined is inappropriate. These errors could also give rise to a loss for the company.

If the company allows surrenders to occur at the price on the preceding day's asset values, anti-selective surrenders may occur if asset values have fallen since that day.

There is a risk that the company may receive bad publicity relating to any errors that may impact on future new business or persistency rates.

*This question was answered quite well.*

**2**     Determination of the free estate

Ownership of the free estate is unlikely to be clear and there is no agreed method for splitting the free estate between shareholders and policyholders. The determination of the free estate is also likely to vary depending on the reason why the free estate is being valued e.g. if the company is being bought or sold or going through a financial restructuring.

One approach is to regard the free estate as not being owned by any particular generation of policyholders. Therefore, since the shareholders provided the original capital to set up the fund the free estate belongs to them, as compensation for the business risks they have undertaken.

However, policyholders may have acquired an expectation that some part of the free estate might accrue to them in the event of a distribution. Therefore, the shareholders'

interest could be regarded as the full market value of the assets comprising the free estate — less an allowance for PRE. The allowance for PRE could be made by using gross premium reserves to value the liabilities that take into account the realistic estimates of future bonuses, or by using project asset shares. It is likely that a stochastic model or scenario testing will be used to determine the projected asset shares/gross premium reserves.

If there is an attribution of the free estate in this way will require regulatory approval.

There are various reasons why the free estate may have accumulated. For example, it may have accumulated over time as a result of favourable experience not distributed as bonuses, or as a result of a demutualisation at some point in the past. (In addition, there may have been negative impacts on the free assets, for example, as a result of one-off mis-selling review costs being met through the use of free assets.) The estate should therefore itself give rise to future profits, which will be distributed to policyholders, as bonuses, and shareholders, as transfers.

It would be reasonable to assume the future ratio of profits arising is the same as current practice, and hence the free estate would be split between the shareholders and policyholders using this ratio.

#### How the shareholders' share of the free estate may be valued in practice

The policyholders' reasonable expectations will be set at a level which reflects the form in which those expectations have arisen — e.g. as a percentage of attaching bonuses. Alternatively a projection can be made on a realistic basis that solves for future bonus rates such that the current free estate is extinguished over the lifetime of the current in-force book of business.

The value of the shareholders' share of free estate will also be affected by how the shareholders' tax is charged, i.e. whether it gets charged to the fund or whether it acts to reduce the shareholder transfers and hence the value of the shareholders' share of the free estate.

If the valuation of the shareholders' share of the free estate is being calculated as part of an embedded value calculation, then there is also a need to consider any accounting guidelines that apply at the time of the calculation.

*This question was answered poorly.*

*Many candidates did not consider how the free estate might have arisen (e.g. due to under-distributions to past generations or with profits policyholders) and the impact that this might have on the ownership and distribution of the free estate. Also whilst many candidates mentioned a method for calculating the shareholders share of the free estate, many failed to describe why the method described was suitable.*

**3** (i) The factors to which the appointed actuary must be alert are:

Concentrations of assets in particular risk areas

Derivatives

Assets containing unusual provisions that may be susceptible to particular risks

Impending major claims or litigation

Operational exposure to accidents, terrorism or malicious damage

Unusual contracts or relationships which may have financial implications

Risks created by deficient product literature or policy documentation

Loss of a distribution channel

The effect, in different scenarios, of options and guarantees in the insurance liabilities and the ability of policyholders or the company to exercise those options that may affect the financial position of the company.

Allocation of profits and/or special distributions of carried forward surplus to policyholders and/or shareholders.

Effect of asset defaults.

The risk of reinsurer default.

Any recent or proposed changes in the company's structure.

Unit pricing risks.

Sources of new business, including potential new business as result of new product developments, which have unusual characteristics or features that may affect the financial position of the company.

Anything that's happened post the balance sheet date, including, for example, any proposed legislative or tax changes that are known about.

GN2 provides a minimum standard of the factors to be taken into account when producing financial condition reports.

- (ii) The report should draw attention to potential developments that are of concern and should explain the options open to the company. If they can be dealt with in a straightforward fashion then they are of relatively little concern and the report need not go into detail on them. If however they lead to financial

difficulty for which there is no satisfactory remedial action then the appointed actuary should give them prominence in the report. The report may attempt to quantify the impact of potential areas of concern and include recommendations as to what might be done to avoid such circumstances.

*This was a bookwork question and as a result candidates tended to either score very well or very poorly, depending on whether they knew the bookwork or not.*

- 4 (i) The paid up value should take into account policyholder's reasonable expectations and should therefore not be less than that guaranteed in the policy or described in any product literature. At later durations the paid-up sum assured should approach the full sum assured.  
The surrender value before and immediately after the alteration should be the same or almost the same. The surrender value of the paid-up policy should be no more than the asset share of the policy.

The profit earned on the policy to date should not be reduced as a result of making the policy paid-up.

- (ii) SV = Surrender Value  
PUP = Paid up Sum assured  
RE = Renewal Expense (For PUP policy)  
CE = Expenses charged to make the alteration. These might be zero.  
 $i$  = Expected earned rate of interest  
 $e$  = Expected inflation rate of renewal expenses  
 $t$  = duration expired  
 $N$  = Original term of endowment

$$\begin{aligned} \text{SV} = & \text{PUP} \times A_{x+t:N-t} @ i \\ & + \text{RE} \times \ddot{a}_{x+t:N-t} @ (i - e) \\ & + \text{CE} \end{aligned}$$

- (iii) The paid-up sum assured is determined simply by pro rating the full sum assured according to term run over full term.

The proportionate method has the advantages that it is easy to calculate and easy for the policyholder to understand but the disadvantages that it gives too great a value in the early years of the policy and too small a value in later years compared to the realistic prospective method.

This is because in the early years the proportionate method does not take into account the heavy initial expenses that the company will have incurred in setting up the policy, and hence produces a PUP value that is too high, whilst in the later years it does not adequately allow for the investment returns earned by the policy to that date and hence produces a PUP value that is too low.

The profit on making the policy paid up will therefore differ between the two methods according to when the policy is made paid up.

- (iv) Issues would arise in relation to attaching bonuses where the proportionate method is used. For example, should the attaching bonuses be proportioned or not? The answer will depend on whether the paid-up contract is to continue to share in profits or no longer participate in profits. And if it is to continue to participate, how terminal bonus should be expressed will be an issue. For example, should TB be expressed as a proportion of total benefits or only attaching benefits or some other measure. Consistency would also need to be considered if other post paid-up policy calculations (for example, surrender values) are based on attaching bonuses.

Where the realistic prospective method is used, it will be possible to take into account the future profit status of the contract and the method of applying terminal bonus.

It is likely that there will be additional PRE issues that the company will need to consider when determining the PUP values for with profits policies.

*Part (ii) of this question was particularly poorly answered. Many candidates did not understand how to equate policy values. Those candidates that understood the basic formulae often failed to mention the rate at a cashflow would be discounted (e.g. at  $i$  or  $i-e$ )*

- 5 (i) The increase in fixed interest yields will reduce the liabilities since a higher interest rate will be used to value the liabilities notionally backed by the fixed interest assets.

The regulators prescribe a maximum rate of return on future premiums and other income that is to be invested more than three years in the future. This rate is related to fixed interest yields but also has an overall maximum. Thus, the total valuation rate of interest for those liabilities notionally backed by fixed interest investments may not be able to fully reflect the increase in fixed interest yields due to the upper limit on the maximum reinvestment rate.

Also, the valuation rate of interest for liabilities notionally backed by equity and property, for which reinvestment is an issue, can be increased due to the higher maximum reinvestment rate.

For the resilience test, the regulators currently recommend an assumed fall in equities that is related to fixed interest yields. If fixed interest yields increase, it can lead to an increase in the assumed fall in equities and therefore an increase in the resilience reserve and total liabilities. The increase in fixed interest yields may also lead to an increase in the assumed future reversionary bonus rate, which will lead to an increase in the value of the liabilities.

The extent to which the liabilities change in value will depend, to some extent, on the valuation method being used. Where a net premium valuation is used to

calculate the value of the liabilities, the liabilities will be less sensitive to a change in the interest rate than if, for example, a gross premium valuation was used.

The value of fixed interest assets will reduce. The extent to which the overall value of assets will change will depend on the proportion invested in fixed interest assets, and in other asset classes such as equities and property. (In addition, it is likely that there will have been a change in the yields on other asset classes during the year when the change in yield on fixed interest assets occurred – which will affect the value of these asset classes.)

The overall impact of the increase in yields on the free assets depends on which of the value of the assets or the value of the liabilities notionally backed by those assets, has reduced by more.

At the year end the company found that an increase in fixed interest yields under the resilience scenario was more onerous than a decrease. This suggests that the liabilities notionally backed by fixed interest assets are less volatile with respect to fixed interest yields than the assets. Thus, if actual fixed interest yields increase, the fall in assets is likely to exceed the fall in liabilities backed by those assets and the free assets of the company will reduce.

(ii) (a)

Until late 2001, the Government Actuary suggested to the Appointed Actuaries the sort of change in fixed interest yields that he considered reasonable to test against. Subsequently, Appointed Actuaries have been expected to use their judgement, taking into account the relevant features of the assets and liabilities.

The Appointed Actuary therefore needs to consider whether the suggested change is reasonable. The company needs to be able to demonstrate that it is solvent at any time during the year so the suggested change, if considered reasonable, will help since the liabilities reduce with increases in fixed interest yields.

The resilience scenarios considered are published in the FSA Returns however, so the company will have changed its statutory basis from that in the public domain. It may feel uncomfortable with this and the Appointed Actuary may need to discuss the proposed change with the FSA before proceeding.

If the suggestion was followed then the absolute level of fixed interest yields under the resilience scenario would be the same as at the year-end, since under both this resilience scenario and at the year end, yields on fixed interest assets rose in total by 1.5 percentage points.

The Appointed Actuary may consider that this is reasonable i.e. that the increase in yield which has happened makes subsequent increases less likely. However, economic conditions may have changed such that

future increases of 1.5 percentage points are just as likely as at the year-end. If so, the suggested change may be less reasonable.

If it is decided that the proposed change is reasonable then the resilience reserve required will be reduced.

The overall impact on the free assets relative to those at the year end depends on whether the reduction in resilience reserve is sufficient to counteract the reduction in free assets which is otherwise caused by the increase in yields as discussed in part 1.

If the total liabilities can be viewed as the current value of the assets which are required to cover the liabilities under the resilience scenario then the free assets are the current value of those assets which don't have to be allocated to cover the liabilities under the resilience conditions — assuming that this is less than the total assets less statutory liabilities on the published basis in current market conditions. The value of the fixed interest assets in the resilience scenario will be the same as at the year-end. The yields on the assets in the resilience scenario will also be the same as at the year end so the value of the liabilities backed by fixed interest assets would be the same.

Thus, although the current value of the fixed interest assets will be lower due to the 0.5 percentage point increase in yields, the actual fixed interest assets required to cover the liabilities notionally backed by fixed interest assets under the resilience scenario will be the same as at the year end.

The assets assumed to be the free assets when assets are hypothecated to liabilities when calculating the resilience reserve will therefore be exactly the same as at the year-end. If none of these free assets were gilts then the value of the free assets will also be the same as at the year-end. If some of the free assets were gilts, then the value of these will have fallen so the free assets will be less than at the year end.

Essentially, the fall in the value of the fixed interest assets relative to the liabilities backed by those assets is exactly matched by a fall in the resilience reserve required.

However, there are other impacts that mean the results will not be the same under this scenario and under the original scenario. For example, because the value of the resilience reserve decreases, then the solvency margin required to be held may also decrease – which would result in a different value of liabilities under this scenario and the original scenario at the year end.

In addition, the change in gilt yield is likely to affect equity yields, which in turn may affect the assumed fall in equity values under the resilience test, so the results under the original test and this scenario will not be exactly the same.



- (b) The resilience scenario which was most onerous at the year-end was the increase in fixed interest yields. The implication is that the value of the fixed interest assets is more sensitive to change in fixed interest yields than the value of the liabilities notionally backed by those assets. This would be the case if the mean term of the assets was longer than that of the liabilities.

Reducing the mean term of the fixed interest assets would reduce the sensitivity of the value of the assets to changes in yield. Thus, the assumed fall in the value under resilience from an increase in yield would be less, leading to a smaller resilience reserve and higher free assets.

However, this assumes that reducing the mean term will have no impact on the yield i.e. a flat yield curve. If shorter terms had lower yields then the interest rate used to value liabilities would also be lower. This would lead to higher liabilities, which might counteract the benefit of the reduced volatility of the assets.

Also, if the mean term were reduced significantly then it might make the value of the liabilities more sensitive to changes in yield than the value of the assets. This would lead to the resilience scenario of a decrease in yields being more onerous thus limiting the benefit obtained by reducing the mean term of the assets.

The company may feel that, from an investment point of view, the potential returns are higher on longer term gilts (i.e. it might be expecting the yields to reduce on these, leading to an increase in market value), so making the switch would lead to lower investment returns.

There may also be a secondary impact on the required cashflow mismatching reserve due to the change in asset allocation, which would need to be taken into account in looking at the impact of holding shorter fixed interest assets.

*This was the question that candidates found most difficult on the paper. If candidates grasped that the assets were more volatile than the liabilities (derived from the resilience scenario that maximised the resilience reserve), they tended to score quite well. However, those that failed to grasp this point struggled with this question.*

*The better candidates considered the impact on the assets and the impact on the liabilities separately and in detail – without allowing these two parts to become muddled.*

- 6** (i) When new business is written, it is often the case that the amount required to pay initial expenses and set up prudent solvency reserves is in excess of the initial premium received. This is called new business strain. Whilst the strain is normally paid back as margins are released over the term of the policy, if a company is experiencing new business growth year after year then the gradual release of margins is not sufficient to subsidise the additional strain each year. In order to continue to write new business and avoid insolvency, a company must therefore have capital to absorb this initial strain.

The company also needs capital to meet minimum statutory solvency requirements.

Capital also permits the company to pursue greater investment freedom, such as investing predominantly in equities rather than gilts. This should lead to higher investment returns and more competitive policyholder payouts.

Capital is very important for a with profits company since it provides a cushion to permit smoothing of payouts. If there is no smoothing cushion, then the company will be unable to smooth payouts upwards when market returns are poor. Capital can be used temporarily to enhance payouts in order to increase competitiveness. This should boost new business and therefore reduce per policy expenses charged to asset shares by spreading overheads over a wider cost base.

Capital demonstrates financial strength. If a company has no or limited free capital, then its published solvency position will appear weak and insurance intermediaries are less likely to place new business there.

Since the company is a mutual, it is important to have internal working capital available since access to external capital is more restricted than for a proprietary.

Free capital allows the company to absorb exceptional expenses, such as the costs of a regulatory compliance exercise, without penalising policyholders through reduced asset shares. It also allows the company to absorb other costs, such as the cost of guarantees or ongoing expense over-runs, which the Actuary does not wish to charge to asset share for competitive reasons.

Capital reduces the need for reinsurance as it enables greater mortality and morbidity fluctuations to be borne.

The cost of developing new product initiatives, such as the cost of developing marketing material and making changes to the administration systems that would be required for the launch of the critical illness product, can be met with free capital.

The company may be able to use the capital to grow its business by purchasing another company or purchasing or developing a salesforce.

- (ii) Since the company has limited capital, it cannot easily absorb mortality losses. It may therefore use original terms or risk premium reinsurance to reduce mortality risk on the term assurances. The arrangement may include return commission to reduce new business strain. Given the capital issues, it may have a relatively low retention limit. The insurer will benefit from being able to hold a lower solvency margin if it passes some risk to the reinsurer.

Catastrophe cover may also be purchased to protect the insurer from large losses/insolvency in the event of a number of claims arising from a single event.

It is difficult to obtain original terms cover on with-profits business since the reinsurer is constrained to follow the insurer's bonus rates. Some risk premium may therefore be used, if there is a material sum at risk.

In the past, reinsurance was unlikely on annuity portfolios, unless there was an exceptionally large case. However, it is more likely these days that the company may use reinsurance for its annuity book and reinsure the whole annuity portfolio in order to crystallise future longevity uncertainty and release prudential margins from the liability.

Alternatively it could restructure by reinsuring all or part of the without profits business internally to a subsidiary. This reduces the assets and liabilities within the core company, leading to a gearing effect that increases the published free asset ratio. It also may have tangible tax benefits.

A reinsurer may be able to assist the company in providing impaired life annuities, if it does not already do so.

The company is likely to use reinsurance for the proposed new critical illness development, since it does not have any past experience at writing this product and therefore has little knowledge of the claims variability that may emerge. Claims variability is likely to be unacceptably high on a small portfolio of business in the period after launch, and for this reason the company will want to reinsure the business. The reinsurance may be on an original terms or risk premium basis, with a relatively low retention limit.

As the company does not have morbidity experience at present, the reinsurer will also be able to provide assistance in setting pricing and valuation assumptions (in particular the morbidity assumption), establishing underwriting standards and claims controls for the new product, and may also provide systems or help with process design.

Note that whilst the aim is to reduce potential mortality and morbidity losses, the use of reinsurance has a cost and also reduces the potential for mortality/morbidity profits. The costs should be weighed up against the benefits.

Since capital is an issue for this company, it may use other forms of financial reinsurance to enhance its published solvency position. This could be in the

form of surplus relief or virtual capital. Again, the cost should be weighed up against the benefit.

The insurer may use facultative reinsurance to place particularly large cases with the reinsurer, that fall outwith the normal treaty limits.

*This question was well answered.*

- 7 (i) There are usually two types of bonuses that are allocated to UWP contracts: regular bonuses (RB) and terminal bonuses (TB). Regular bonuses are allocated to the contract throughout the term of the contract and they can be allocated in one of two ways, depending on how the unit part of the contract operates.

The price of a unit could remain constant and the company allocates additional units to the contract, usually on a daily basis. An alternative method is where the company increases the price of a unit each day. The additional units or the increase in price will be made up of a "guaranteed" element, which may be zero, and a "bonus" element, where the company chooses the number of bonus units to be allocated or the increase in unit price.

Special bonuses may also be given, where 'one-off' events have occurred. This could take the form of additional units being allocated.

In addition, on termination of the contract, at maturity, death or on early surrender, a terminal bonus will be added to the bid value of the units allocated to the contract during the time it has been in-force. At maturity or death the company will add on a terminal bonus that is consistent with its terminal bonus philosophy, for example, bringing the total maturity value up to a fixed percentage of the smoothed asset share.

On early surrender, the company may also decide to apply a market value adjuster, to reflect recent movements in the stock market and to bring the surrender value closer to a desired percentage of smoothed asset share.

The company will usually determine bonuses using a tranche approach, where bonuses are determined according to the date of entry/purchase of units or according to how long the units have been held.

- (ii) The company will need to carry out two types of investigations: one to assess whether the regular bonuses being allocated are supportable and one to assess whether the terminal bonuses being declared are supportable.

### **The regular bonus investigation**

A cashflow model would be set up that projects the UWP liabilities and the assets backing the UWP business. The projections of the UWP liabilities would include a projection of both the unit and sterling reserves required on a

realistic basis, allowing for the current levels of regular bonus to be maintained.

If the company doesn't offer any guarantees in respect of future premiums then in considering the supportability of the existing regular bonus levels, the realistic reserves only need to take in to account the premiums paid to date. However, in practice, policyholders may have expectations that the UWP rates will not fall, and hence it would be more appropriate to take future premiums into account when calculating the realistic reserves to allow for PRE.

The value of the assets backing the UWP liabilities will be projected using a cashflow model and is most likely to take the form of projecting the expected asset proceeds (e.g. investment income) from the assets backing the UWP liabilities.

Note that the company would not want to take into account any free assets that might be being used to support the UWP business so the company may choose to project aggregated earned asset shares in its cashflow model of the assets.

The company will compare the discounted value of the earned asset shares with the discounted value of the UWP liabilities. This comparison will usually be done for sample policies using model points within the cashflow model.

If there is sufficient excess in the value of the asset shares above the realistic value of the UWP liabilities to pay an adequate terminal bonus, then the regular bonus level is supportable. However, if the gap is not sufficient, or if the value of the liabilities exceeds the value of the asset shares, then the regular bonus level is not supportable and the company will have to consider the steps it needs to take as a result of this finding.

It is likely that the company will run the projected cashflows many times, allowing for different investment returns in the future. The company may choose to do this using different investment return scenarios projected out for the future lifetime of the contracts. e.g. low investment return, low inflationary environment retained for next five years with a gradual return to previous levels of investment returns and inflation experienced in the past beyond five years, etc.

The company may choose to use a stochastic model to produce the scenarios to be tested. The company will need to ensure that other assumptions move in line with the changes in investment return to ensure that the projections remain as realistic as possible. For example, as investment returns increase inflation may be expected to increase, which in turn will affect the expenses of administering the contracts. These expenses inflating at a higher rate than the recent past will need to be reflected in the liability model.

The company may also project new business, to assess the bonus earning power, to test the adequacy of current premium rates.

### **The terminal bonus investigation**

This is also likely to be based on a discounted cashflow model. The projected asset shares for contracts close to maturity will be compared to the realistic UWP reserve at the time of maturity (which will include all regular bonuses but exclude any terminal bonus). The difference between the two will reflect the extent to which the company may award terminal bonus without support from free assets. This will be compared to the terminal bonus rates that the company has paid recently for contracts of the same duration.

If there is a large difference between the terminal bonus rates the company has paid in the recent past and what it can now afford to pay, based on these projections, the company may need to consider changes the terminal bonus rates it declares.

The company may then do a similar investigation for contracts that are further away from maturity. The company will project the current earned asset shares to maturity, allowing for future investment returns, and project the current UWP liabilities to maturity, on best estimate assumptions, to project the terminal bonus rate that the company may be able to offer at that time. This will allow the company to spot any trends in supportable rates of terminal bonus to allow them to take corrective action now. For example, these projections may show that supportable terminal bonus levels are continually falling, which may not be desirable.

Because UWP contracts offer the policyholder greater flexibility generally than conventional with profits contracts (e.g. the policyholder can usually pay premiums of varying amounts, or can take premium holidays), the terminal bonus investigations are likely to be more complicated than the equivalent investigation for conventional contracts.

The company may attempt to address this by considering a larger number of specimen contracts that have got similar premium paying patterns, to determine supportable terminal bonus rates or by calculating asset shares at an individual policy level as opposed to aggregating over classes of contract with similar durations.

- (iii) If the company finds that its current levels of bonus are unsupportable it may take the following actions:

The company may choose to reduce the regular bonuses that are being added to the contracts. This may be contrary to policyholders reasonable expectations — policyholders may expect regular bonus rates to remain at the previous level unless there has been an obvious decline in investment returns.

The company will also have to consider the impact this will have on its competitive position. For example, competitors may be declaring higher regular bonus rates, which may result in this product being removed from “best advice” product panels if the product is sold via the intermediary channel.

The company may also choose to reduce terminal bonus rates (or it could choose to just reduce terminal bonus rates and leave regular bonus rates unchanged). This is likely to be less contentious from a PRE perspective, since terminal bonuses are not guaranteed, especially if TB rates have varied from year to year in the past. The company will also need to be able to demonstrate that the reduction in TB is equitable (e.g. if investment returns over the duration of the contract can be shown to be lower than the investment returns earned on a similar contract that matured last year).

To continue to attract a certain level of new business, the company may choose not to change the bonus rates. It may instead choose to support the current levels of regular and terminal bonus from free assets. The company therefore expects to pay out more than the earned asset share for these contracts. The impact of this will be to reduce free assets over time, which in turn will reduce the company's ability to support the writing of new business and will reduce the investment freedom of the company (which will have a knock-on effect onto the investment returns the company can expect to make). Hence to company will not be able to do this indefinitely.

The company could choose to raise capital from other sources (e.g. from shareholders) to pay for the excess amount distributed over and above asset shares. However, the company will need to consider equity, since it will be paying this group of policyholders more than the asset share at maturity. This may not be equitable with other groups of policyholders who have only received their asset share at maturity in the past.

The company may consider introduce a new UWP fund into which all future premiums will be invested for existing contracts and in which all new business will be written. This new fund could have a different asset mix backing the fund and could also have a different surplus distribution philosophy, with a greater element of terminal bonus than the existing fund. This would allow the company to introduce a UWP fund that had bonus rates in line with the supportable rates that were derived in the investigations in (ii) above.

The company could also consider redesigning its product or using a lower allocation rate, so that the bonuses it is possible to declare are in line with PRE.

Another alternative would be for the company to stop writing new business altogether for this contract, though that may not be an attractive option.

The company could also consider using aggressive MVA's for any withdrawal, though this may cause bad publicity for the company.

*Part (i) of this question was well answered.*

*Part (ii) was not well answered as candidates often failed to describe in sufficient detail the investigations that the company would undertake. Many failed to consider that the company would use scenario testing or a stochastic model, which given recent events in the stock market, is surprising. In*

*addition, many failed to mention the points specifically related to the features of UWP business (e.g. where there is greater flexibility regarding changes to premium levels, and hence a need to consider a larger number of specimen contracts).*

*Part (iii) was quite well answered. Many candidates, however, often failed to consider the impact that PRE would have on the company's ability to alter its bonus rates – and many failed to consider the other alternatives the company had apart from changing rates (e.g. introducing a new UWP fund for future premiums).*