Faculty of Actuaries | Institute of Actuaries

EXAMINERS' REPORT

April 2010 Examinations

Subject SA2 — Life Insurance Specialist Applications

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. 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.

R D Muckart
Chairman of the Board of Examiners

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Comments

These are given in italics within the solutions that follow.

1 (i) ***Purpose:***

A policyholder might effect a with profits policy for savings purposes, including saving to help repay a loan.
The underlying smoothing of investment returns is an attraction as the policyholder may not want returns that are too volatile but may still wish to invest in equities and property.

A larger sum is expected to build up compared with saving money in a bank or building society account, after allowing for the cost of the life cover.

With profits contracts give access to the equity market with underlying guarantees which may suit those willing to take some risk but who do not want to take on the full risk of investing fully in unit-linked contracts.

Risks:

The main risk is that the policy will not provide the amount originally projected. If it was taken out to help repay a loan, the policyholder will have to find other means to repay any shortfall, or extend the term of the loan.

A shortfall could arise for a number of reasons, most likely due to worse than expected investment performance by the insurer, but possibly as a result of increasing expenses of the latter.

There is a risk that the company may change the investment strategy (for example by investing less in equities) which may reduce the expected payout to the policyholder.

There will always be a risk that the company becomes insolvent or that its ownership changes, either of which could have adverse consequences for a policyholder's benefits.

If the policyholder cannot afford to keep paying the premiums it may be necessary to surrender the policy or convert it to paid-up. This may not represent good value for the premiums paid. In particular the cash surrender value in the early years of the policy may be less than the premiums paid.

There is a risk that the company makes losses on the without profits business or other areas of the business which will impact the return on their with profits contract.

Overall, there will be the risk that the policyholder did not fully understand the nature of the policy affected and its investment and other risks.

There is also a risk that tax changes may erode the value of the benefits.

This question part was well answered by most candidates, a good range of risks were identified in the answers.

(ii) The issues the company will have to consider in managing the fund when closed to new with profits business:

The company will have to produce a run-off plan.

The run off plan will take into account instances where the company allows future investments of with profits business, for example:

- Additional single premiums under existing policies
- New members to existing group arrangements

The company should have regard to what the PPFM states about closing to new business, and it will have to change the PPFM post closure.

Whole life contracts

The company has whole of life contracts which use bonus rates based on the endowments. If the company closes to new business, then it may be the case that over time there are very few endowments left in the fund on which to base the bonus rates.

The company will have to have a process in place by which it can determine bonuses going forward in this situation.

For example, this could be based on bonuses supportable by the BRV reserves taking account of the past split between TB and RB.

Distribution of the estate

The company will need to consider how it will distribute the estate to policyholders.

The company's risk appetite will be important.

- The company will want to ensure there is enough capital to withstand a stressed situation.
- At the same time the company will aim to avoid a tontine effect (i.e. capital being held back is then available to fewer and fewer policies).
- The company needs to find a balance to ensure that customers are treated fairly.

The company may wish to avoid changes which contradict policyholders' expectations with regard to the investment mix and the split between TB and RB with regard to their normal benefits. Both of these are impacted by the capital available, which again may have an impact on when the estate is distributed.

The company needs to consider whether it wants to allocate the estate by giving more to those with longer durations or more to those who remain in the fund for longer in the future.

It may decide to allocate the estate in proportion to asset shares accrued.

It needs to decide whether to allocate a special bonus or simply to enhance RB/TB rates.

The company will not want target payouts for normal benefits to change and so it needs to ensure that enough capital is available for it to run its smoothing policy in line with expectations.

The company may wish to incorporate some form of clawback of estate distribution in the case of solvency being threatened. This will impact on how much of the estate distribution should be purely uplifts to asset shares and how much in guaranteed form.

Alternatively the company may decide not to allocate the estate to asset shares, but to maintain an expected range of uplift to payouts, and distribute the estate only on payout. The uplift could be revised at future dates subject to the solvency levels of the fund. The company could also give different target uplifts to those who mature and those who surrender.

The company will in addition to the above be concerned to maximise the transfers it can make to its shareholders. The method of distributing excess surplus as bonus will affect the pace at which transfers can be made.

Whether the company allocates the estate as guaranteed bonuses or not will have an impact on the relative levels of estate given to policyholders. For example:

- allocating estate to asset shares and not as guaranteed bonus to a policy which is heavily in the money could mean the policyholder gains very little.
- where policies have a guaranteed annuity option (GAO), the company may want to apply the GAO to total payouts including uplifts. In this case, policies with in-the-money GAOs will effectively benefit more from the uplift than otherwise identical policies without GAOs.

The company may want to consider a formal attribution of part of the estate to shareholders.

This could depend on whether or not the shareholders have injected capital into the fund in the past.

Investment policy

The company may want to reconsider its investment policy.

As more and more policies become mature, the company may wish to match the guarantees more closely by hypothecation.

This could have implications for policyholders' reasonable expectations so statements in product literature and the PPFM should be considered.

The investment strategy of the inherited estate may also be reconsidered.

The company may decide that some form of de-risking, either of the guarantees or of the estate itself may be appropriate as the fund runs down.

Investment in certain types of asset (e.g. direct property) will become more difficult as the fund decreases in size.

Lapses

The company may find lapses increase as policyholders find out that it is closed to new business.

Alternatively lapses may reduce as policyholders wait for the estate to be distributed.

Communications to policyholders should be considered.

The method of allocating the estate is likely to be a key driver of policyholder behaviour.

The company currently pays on average asset share on surrender. The company is unlikely to change its approach, but if extremely high lapses are expected after the fund closes, the company may wish to ensure that due to smoothing, the current level of surrender payouts are not higher than asset shares since high lapses could cause a significant impact on the inherited estate if this is the case.

Without profits business

Without profits surpluses are currently allocated to asset shares, and the company will need to consider whether its current approach is still appropriate.

The without profits business, particularly annuities, may have a much longer term than the with profits business so the company needs to decide how to fairly distribute any surpluses arising on this business to the existing policies.

The company may decide that it will need to sell the without profits business off at some stage in the future, or it may consider some form of securitisation. It is unclear whether the company still sells new without profits policies, but if it does then these issues will be exacerbated.

If the company wishes to continue to sell new business then it is likely to do this in a separate shareholder owned fund.

There may be significant uncertainty in the value of the existing without profits business (for example the liquidity premium may not be borne out in the future and longevity is an unknown). This uncertainty will make it hard to ensure a fair allocation of the surpluses arising on this business and the company will need to consider ways of bringing reducing the uncertainty, for example it may consider hedging the mortality risk.

All of the above may lead the company to change the way it measures and allocates profits on this business. Past practice and TCF need to be considered. For example if the business is sold or an embedded value approach is taken to allocate the profits, then allocating all this to asset shares means that the policies with a shorter outstanding duration will receive more than they otherwise would have.

The company will also have to ensure that it treats its without profits policyholders fairly by ensuring that there remains sufficient capital to ensure that their benefits are secure.

Smoothing

The company will need to consider its approach to smoothing after it closes to new business.

Although the current approach may be neutral over time in open fund, a trend in investment returns for example could invalidate this assumption. For example there could be a high level of maturities in one particular year which are paid more than asset shares, and it may not be possible to recoup this cost from the policies left in the fund.

Since the company will be considering distributing the estate over time it will be important to understand whether the smoothing approach genuinely is neutral over time or whether the estate may be required to fund smoothing.

The company may consider monitoring a smoothing account with a view to recouping/paying costs back over time so can concentrate on estate distribution.

Policyholders will have expectations that bonus rates will not change significantly from year to year.

Deciding how much to smooth them involves a consideration of the company's past practice.

Smoothing practice is closely linked to the investment strategy decisions; if the company wishes to continue to invest significantly in equities then the above issues are more significant.

Investigations

The company will need to consider the impact of closing to new business on the investigations it carries out in order to assess bonus supportability.

Key assumptions are the investment return and expense levels both of which may be impacted by the closure to new business.

Per policy expenses will increase as the business runs off, due to diseconomies of scale applied to the fixed and overhead costs and the need to pay additional expenses such as redundancy payments. This effect could be exacerbated by higher lapses.

Tax rates may be impacted by the closure to new business.

In addition the company needs to take account of any distributions of the estate in its projections as this could impact security and the results of the modelling.

Modelled management actions need to incorporate expected changes to the bonus distributions.

Consideration will need to be given to when the fund might eventually wind up and options the company has when this situation is faced.

The company will need to set out the governance structure; the WPA will have a duty to ensure the fair run-off of the fund.

The Pillar 1 Peak 2 realistic balance sheet will have to reflect the closure, which has a direct impact on the WPBR.

The Pillar 2 ICA calculation will have to reflect the closure; some risks (e.g. operational) may increase.

This question was reasonably well answered by a number of candidates, some candidates differentiated themselves by doing very well.

The key to these long questions is to generate a sufficient variety of points / ideas and then to expand the answer to cover the salient features. One common mistake made by some candidates was to not consider how the inherited estate should be treated, which was the major part of the question.

The question required applying knowledge to the situation of a company which has closed to new business. The amount of marks available should have led students to discuss the various areas in some detail However, even though many candidates touched on smoothing, investment policy and how to deal with the whole life contracts, very few went into the detail which was required to gain significant marks. Most candidates who discussed the distribution of the inherited estate, made a reasonable attempt at setting out the issues around the distribution of the estate and picked up a number of these marks available.

A number of candidates thought that a company could enlist a policyholder advocate to negotiate a reattribution of the inherited estate after closure. However once the fund has closed, the estate should be distributed in line with other profits (usually 90/10), unless the shareholders believe they have more of a claim due to having injected capital.

(iii) For unitised with profits contracts, charges as opposed to expenses incurred are deducted from asset shares. There will therefore be a difference between the two figures by the amount that the sum of the charges differs from total expenses allocated to this business. In particular, shareholder transfers are 1/9 of the cost of bonus, and so may differ from the allowance made in the explicit charges.

Approximations may be used in the calculation of asset shares may cause a difference between the aggregate asset accumulation and the asset shares. For example:

- Premium income not being exactly equal to the premiums allowed for in the individual calculations due say to the timing differences of when they are assumed to be paid and when they are actually paid, and any approximations in the timing of decrements.
- Investment return rates allocated to asset shares may be derived by taking the total return allowing for broad timings of cash-flows (including dates of when assets are traded), and when applied to the individual calculations these may cause a difference.
- Tax actually due to be paid may be approximately allowed for in asset share calculations, or there may be a delay in knowing the actual tax payable.
- Mortality profit and loss – the individual calculations are likely to assume rates of mortality in line with a % of a mortality table and apply these to each policy calculation. In reality the deaths will not be spread evenly in line with the table or smooth year on year. Depending on how the actual experience has been derived will determine how big the differences are.
- Surrender profits or losses – these are allocated in a broad way and it is possible that there is a mismatch between the amount allocated and the actual profits and losses made.
- Similarly the allocation of without profits surpluses using a percentage factor looks like it is approximate.
- Shareholder transfers – again there may be approximations in how these are allocated to asset shares.

Any payouts over asset shares on maturing policies are unlikely to be charged to individual asset shares and are likely to be charged to the estate. This will cause a difference in the two figures and could be attributed to smoothing or guarantees.

There may be other charges made to the asset shares not described in the information provided, such as a charge for the cost of capital, or a charge for the cost of guarantees (e.g. the GAOs), the cost of smoothing or a contribution to the estate.

There may be some exceptional expenses incurred by the with profits fund that are not directly attributed to asset shares.

Approximations may occur in the asset share calculations if these are done using model points rather than individual policies.

Whole life policies use a BRV methodology for the WPBR. Over the year there will be a profit or loss made in terms of actual experience being different to expected.

Broadly, the BRV at the year end equals the BRV at the beginning of the year, plus expected premiums and expected investments less expected death claims and expected expenses. Any difference in these items to actual experience will contribute to the difference between the aggregate and the sum of the individual WPBR calculations.

This question part required application of knowledge and was not answered well by most candidates, a number of candidates failed to distinguish sufficiently the differences between the calculation of aggregate asset shares and individual asset shares. As a result answers tended to be superficial and candidates showed a lack of understanding.

Most candidates picked up marks for discussing the differences between the WPBR and the whole of life prospective reserves.

The question required candidates to consider each item making up the asset shares in turn, and consider whether there could be any difference between the two calculations.

(iv) The director is correct that the impact of the working capital being invested in the assets based on the information provided would have reduced it by just over 6%, he has derived this by taking 50% equities (dropped to 80%), 10% of property (dropped to 90%) and fixed interest of 40% (increased to 112%), i.e. (1-0.5*0.8-0.1*0.9-0.4*1.12 = 0.062).

However this does not take into account the fact that the assets backing the liabilities and the liabilities themselves may not move exactly in line with each other:

- the existence of guarantees on with profits business are included as a liability in the realistic balance sheet;
- these guarantees act like put options and increase in value when asset shares fall;
- plus the cost of the guaranteed annuity options is likely to have increased due to the lower yields which increase their "in the moneyness"
- risk free rates might have decreased, which is likely given the fall in yields; this would also increase the value of the guarantees particularly if the term of the liabilities is longer than the term of the assets;
- there could be some offset to the overall expected increase in the cost of guarantees if future reversionary bonuses are reduced in line with the fall in fixed interest yields

- there could be a mismatch between without profits assets and liabilities, for example, the liabilities may have increased by more than the assets which is not offset by any increase in the present value of future profits;
- the WPBR for the whole life contracts will have assumed a rate of return and any mismatch in this and the actual return will impact the inherited estate. There may be some offset to this if the bonuses supported by the endowment asset shares reduces and this is brought into the calculations of the whole life WPBR;
- there may also be other liabilities such as current liabilities that are unmatched.

Market conditions could also have had an impact on the year end economic assumptions which may have increased the cost of guarantees without increasing assets, for example:

- equity or property volatilities may have increased;
- default assumptions for the fixed interest assets may have increased.

Further, the Director's calculation could be over simplified. The information provided on the split of assets appears to be highly rounded; a more accurate split (e.g. higher equities, lower fixed interest) would change the overall calculation.

Similarly the market movements quoted appear to be rounded and may not relate explicitly to the actual stocks held.

In particular the equities actually held by the company are likely to include overseas as well as domestic stocks, and these could have fallen in value by more than the UK equity market.

The six year averaging calculation may over-simplify the market value movements in fixed interest, particularly if the yield curve is not flat or if it has changed shape.

The timing of cashflows over the year relative to the market movements will also have a material impact on the overall change. The Finance Director's calculation does not take this into account.

Not answered well by candidates. As with the previous part answers were superficial and candidates that did not score well either did not consider realistic assets moving differently to realistic liabilities or did not consider how the different realistic liabilities would move under the market movements.

Some candidates made the mistake of discussing other items affecting working capital such as lapses, rather than sticking to the question.

2 (i) Contributions:

Payments up to £3600 pa, or full earnings if higher, can be made whilst receiving basic rate tax relief.

Higher rate tax payers receive relief at this rate as part of personal tax liability.

An annual allowance exists for contributions, and is £245k for the current tax year. Contributions in excess of annual allowance are taxed at higher rate tax.

Benefits:

Pensions are taxed as earned income, and trivial amounts can be taken all in cash.

Part of benefits can be taken as a tax-free lump sum which is usually 25% of funds

A lifetime allowance exists and is measured as the maximum fund that can receive tax relief. This limit is currently £1.8m.

Investment returns earned by the fund are broadly gross of tax, other than equity dividends.

This bookwork question was generally well answered.

A common mistake was to not consider all of the time periods of the product when considering the tax regime, for example, when paying premiums, growth on the assets that the premiums bought and on vesting.

Another common mistake was to mix up the taxation of compulsory purchase annuities and purchase life annuities.

(ii) **2008:**

BLAGAB tax:

I – E = 900 – 700 = 200

GRB: 100

Total taxable income = 200 + 100 = 300

NCI profit = 100 + 50 = 150

=> Profits test doesn't bite

Shareholder share = NCI profit = 150 @ 28% = 42

Policyholder share = Balance = 300 – 150 = 150 @ 20% = 30

Total tax bill = 42 + 30 = 72

2009:

BLAGAB: I - E = 10

GRB: 65

Total taxable income = 10 + 65 = 75

NCI profit = 25 + 65 = 90

So "profits" test bites.

All profit is taxed at 28% = 90 @ 28% = 25.2

Allowable expenses in "I-E" computation are restricted so that Total Taxable Income and NCI profit are equal.

Expenses restricted to 475
so that I – restricted expenses = 25
and TTI = 25 + 65 = 90

Restriction = 15 and is carried forward as XSE = 15

This question was answered well by candidates who were well prepared, with a number of candidates gaining full marks. However, a common mistake was to tax the GRB at 20% rather than 28%. Also, candidates tended to ignore the GRB when comparing "I-E" with NC1.

(iii) BLAGAB I is lower in 2009 which may be due to:

- lower investment income on any asset
- lower mark-to-market capital returns on gilts and other bonds
- lower indexed realised gains or higher realised losses on real estate and equities

BLAGAB E has reduced from 2008 to 2009 which may be due to:

- a reduction in new business volumes following a down-turn in the market and the decision to stop selling endowments
- exceptional expenses incurred in 2008
- the company imposing a cost-cutting exercise across the business
- high acquisition expenses from business written seven years ago having run off

GRB Case VI profit has reduced, which may be due to:

- an increase in new business
- lower investment returns
- increased expenses
- strengthening of pensions business valuation basis

BLAGAB NCI profit has reduced but not by as much as the fall in "I-E", which is the reason why the company has moved to an XSE basis.

This may be due to an increased release of supervisory reserves due to higher withdrawals.

Or a weakening of the BLAGAB business valuation basis.

Some of the business is unit-linked, falling I reduces both assets and liabilities but it also reduces charges, so surplus falls by a little bit but not as much as by which I falls.

Variable unit-linked charges could have been decreased in line with the fall in expenses, which would offset the profit impact of the lower expenses and the NCI profit would be increased by less than the reduction in E.

New BLAGAB business is now term assurance, with high expenses relative to investment income.

Therefore selling more new business could contribute to a move to XSE, although this contradicts the lower total E.

This question part required some application of knowledge of the taxation rules. It was generally not well answered. Candidates that did not perform well generally failed to generate sufficient points. Better structuring of the answer (I, E, NC1, GRB) would have helped to focus the answer better.

(iv) Historically the company has been in an XSI position but has moved to an XSE position in 2009

An XSI position means that it is taxed on all its investment returns and receives tax relief on all its relevant expenses

Term Assurance Business

The term assurance business will be taxed on the BLAGAB "I-E" basis

Term assurance business tends to be XSE when considered in isolation as it generates more E than I due to low reserves

But will have been taxed on company basis rather than considering in isolation

When taxed on XSI basis will result in competitive premiums as expenses receive tax relief. If the company moves to XSE basis, this may result in uncompetitive premiums as investment income and expenses will be assumed to be gross within the pricing basis.

So there is a risk of reduced volumes of term assurance business being written if the tax basis changes in the long-term

The company needs to consider whether this is a short-term position or long-term change to the tax position, which will depend on the drivers of the move to XSE. The company may therefore wish to do a projection of the tax position in the future, and may decide to start selling unit-linked endowments again if it feels that this would be beneficial.

Unit-Linked Pensions business

The change from XSI to XSE has no material impact on Gross Roll-Up Business

This question was not well answered by the majority of candidates.

An incorrect, but common theme coming out of the answers was that moving to an XSE position meant you could use net expenses and investment income and would be advantageous to the company. Candidates had not thought about the impact of having to use gross expenses and gross investment income when pricing term assurance where expenses are more significant than income.

Some candidates seemed to have missed the fact that the company had stopped selling unit-linked endowments and considered how the change in tax position would be beneficial to these and did not mention the impact on the term assurance business. Some candidates concentrated more on the fact that being XSE may have a negative impact on publicity which would impact sales, as opposed to how the tax position may affect the pricing.

(v) **Responsibilities of AFH**

The AFH must advise management on risks being run by the firm that may affect long-term liabilities relating to policyholders, and on capital required to support the business on an ongoing basis.

The AFH must monitor these risks, and inform management of any concerns that firm may fail to meet liabilities, including the terms on which new business is written.

The AFH must advise the firm on methods and assumptions for actuarial investigations, perform the investigations, and report the results to the firm's governing body. These investigations include those relating to solvency.

This bookwork question was well answered by most candidates, but some commented on a number of lesser duties and missed some key duties.

(vi) Why AFH would be interested in company's tax position

The solvency of company is dependent on tax liability, and the AFH needs to know if tax liability is likely to change significantly in the future in order to project the future solvency position of the company. For this, the AFH also needs to know what has driven current change will influence this

The AFH needs to gain comfort that tax liability has been determined correctly.

Certain actuarial assumptions depend on tax status of company, for example, investment return on BLAGAB business, and BLAGAB expenses subject to tax relief.

As supervisory reserve assumptions are long-term assumptions need to understand expected long-term tax position.

New business terms for term assurance will depend on whether the company is XSI or XSE, hence the AFH needs to ensure new business terms reflect long-term position of tax status.

Tax needs to feed into unit pricing.

The question required some application of knowledge, and most candidates failed to score well on this question, mainly being unable to generate sufficient points, other than those related to new business pricing. Many did not even mention that the actuarial assumptions are dependent on the tax position of the company.

(vii) It is appropriate to tax any profit that is deemed to be "shareholder profit" at the corporation tax rate (28%), as for any other company.

It is also felt appropriate to tax any profit that is deemed to be "policyholder profit" at the policyholder personal tax rate (20%), as for any other individual investor.

Therefore total profit arising is split into these two separate components.

Using the revenue account statement of profit:

Shareholder profit = Premiums + Income/Gains – Expenses – Claims

Policyholder profit can be regarded as excess of claim amounts over premiums paid

Where claims includes increases in policy reserves and claims in excess of opening policy reserve

Policyholder profit = Claims – Premiums

Shareholder Profit + Policyholder Profit = Income/Gains – Expenses

So taxing shareholder profit and policyholder profit separately has net impact of taxing on an "I-E" basis

The answer is straight out of the core reading, however few candidates were able to score well on this part of the question. Where a candidate did not know what to write a general *tactic was to put some vague comments around BLAGAB tax in the hope of being lucky. The few well prepared candidates could score full marks on this question.*

END OF EXAMINER'S REPORT