Subject SA2 — Life Insurance
Specialist Applications

EXAMINERS' REPORT

April 2009

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.

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Chairman of the Board of Examiners

July 2009

Comments

Comments for individual questions are given in the solutions that follow.

1 (i) The advantages and disadvantages of these equity release products from the policyholder's point of view are as follows:

The product allows policyholders to release money from their property without the need to move house, downsize or meet any payments before the sale of the house. This can be used to help with retirement planning or to provide a windfall payment for house repairs, holidays or large purchases, and is particularly good if the policyholder has no-one expecting any inheritance.

The NNEG feature is attractive: it can reduce worries, and the policyholder still benefits from any upside in house price growth. The policyholder can be reassured that any dependents will not be left with a debt.

For product A, if actual interest rates turn out to be much higher than the fixed interest rate applied, then the policyholder has benefited from a relatively cheap loan.

It is relatively easy, both for product A and B to understand what needs to be repaid at any time. For A, the repayment is simply the loan accrued at the fixed interest rate, and for B the amount is fixed over time.

The main downside is the fact that the loan is normally not re-paid until after death, so the cost is met by the estate of the policyholder which therefore reduces payments to dependants.

For Product A this would be exacerbated if the policyholder lived a long time and the loan had accumulated a lot of interest. This is particularly true if general interest rates fall so that they turn out to be significantly lower over that period than the fixed interest rate applied.

For Product B it would seem particularly unfair if the policyholder died early and paid back a significant amount more than the original loan. Conversely, this is an advantage if the policyholder lives a long time.

In addition the pricing of the contract would have to take all the risks into account and the dependents may feel that the estate is being charged with much more than if a normal interest only mortgage had been taken out.

Lenders will require the policyholder to maintain the house in good condition, which can be costly and may cause the policyholder concerns.

Taking out an equity release product could affect the policyholder's income tax position or eligibility for state benefits.

There may be implications for inheritance tax planning. For example the policyholder may wish to give their family part of the equity in their property whilst still being able to live in the property. This may not be allowed under the policy conditions.

There could be issues if there are dependents living in the property. Unless the policy insists on the policy being based on multiple lives where there are dependents, then any dependent will have to leave the house on the death of the policyholder in order for the loan to be repaid.

If you move house it appears that the loan needs to be repaid. Assuming that the policyholder has spent the money, it would be better if the contract could be transferred to the new house as this could be a barrier to moving.

This question was generally well answered, particularly those who showed knowledge of the Unit 2 Core Reading. Candidates found it easier to consider the advantages rather than the disadvantages. Most picked up that there could be issues with dependents.

(ii) The advantages and disadvantages of these equity release products from the company's point of view are as follows:

The main benefit to the insurer is the ability to utilise the enormous amount of equity tied up in domestic property belonging to elderly people who are asset rich income poor. The company will be able to make profits from this business, although this depends on the level of competitiveness in the market. It is easy to compare rates offered and so any competition could have a big impact on the profits made.

Demand is growing for these types of products, due to the ageing population and to a reduction in the financial support provided by pensions, and so the target market is big.

There may be diversification benefits to selling these contracts, for example the asset may be less volatile than other assets in some scenarios.

There may be cross selling possibilities into other products which the company sells. For example the policyholder may decide to buy an annuity from the company or some term assurance to ensure there is still some inheritance left when they die.

For both products, the NNEG introduces a risk that the value of the house will reduce to below the level of the outstanding loan on the sale of the property. For Product A the NNEG risk becomes higher over the longer term due to the fixed increase in the loan. This means that the risk is exacerbated by longevity

Data for both residential house prices and decrements for these contracts will be difficult to find, and so there is a risk of mispricing the contract.

For Product A there is also a risk that interest rates rise and the fixed income received is not enough to pay for the variable payments to be made. Interest rates falling are in the company's interests. This could be slightly exacerbated by fewer surrenders than expected occurring as customers realise they have a good deal and do not repay early

For Product A there may also be a persistency risk due to policyholders surrendering and rebroking if interest rates fall.

For Product B, the amount of loan remains fixed over time as opposed to increasing like for Product A, and the NNEG risk is likely to be higher at earlier durations if we expect house prices to rise over the longer term. Conversely, longevity will be a significant risk for Product B, the longer it takes for the fixed loan to be repaid, the more chance there is that the repayments made for funding costs exceed the income from the loans repaid.

For Product B, there is a risk that interest rates rise, and repayment of the loan funding costs is higher than priced for.

There is a risk that the expenses of maintaining the assets increase (for example checking the house is maintained to a reasonable standard, as there is little incentive for the policyholder to keep the house in good condition).

There is also a possible reputational (or mis-selling) risk from angry dependants who think that the insurance company swindled them out of their inheritance. This could be exacerbated due to the products being sold to elderly people, who may be considered less able to understand the product. There could also be issues with mis-selling if there are dependents living in the property. Unless the policy insists on the policy being based on a joint life basis where there is a dependent, then it is very likely to result in bad press if the company has to throw someone out of the house. Even with joint life cases, care needs to be taken if there are other dependents living in the house (e.g. sons and daughters).

The guarantees are difficult to price. The company may need to develop stochastic models to calculate the NNEG.

This product is very illiquid and the company is at risk of not having sufficient liquid assets in the future.

The asset may need to be written down in severe market conditions due to either a house price crash or interest rates increasing to above the level paid by the policyholder.

This question was not as well answered as part (i). A common problem was that candidates wanted to be too generic with their answers rather than thinking separately about the two products. The better answers considered how the risk of interest rate movements and longevity affected the products differently, and also how the sale of these contracts impacted the company in a wider sense.

(iii) Allowance for the risks in the ICA

The ICA is a test on how much capital needs to be held to cover an extreme event. This product is held as an asset in the company's balance sheet and as such the value should be stressed in the same way as the liabilities of the

company are stressed since the value of the asset (ie the present value of the income less outgo), could be lower than the face value held in the balance sheet.

The company must first decide whether to perform the ICA over a one year time frame or longer. Given the nature of the long tail risks involved it is likely that a longer timeframe would be used. This involves looking at the amount of capital required until the last contract is off the books. Alternatively a one year stress taking account of the long term change in longevity at the year end may be used.

So the company must decide on an appropriate confidence level to use over this longer period and this needs to be equivalent to 99.5% over one year.

The company should build a model which projects income (loan repayments subject to the NNEG) less outgo (repayment of funding costs and expenses)

The company needs to decide which risks need to be stressed for example:

- liquidity risk may be an issue as it takes a long time for the income to materialise
- group risk
- HPI is a risk due to the NNEG so should be a key variable to stress
- similarly interest rate risk due to the mismatch in funding
- credit risk is unlikely to be an issue
- mortality and longevity risks exacerbate the NNEG for product A, and will reduce the value of future income for product B by increasing the funding costs with no increase in income

The base assumptions for mortality, early repayment, move to long term care and expenses are required and should be based on historic data or industry research where available.

The company needs to decide on which inputs to the model will be stochastic and which will use stresses. The company is likely to use a stochastic model to model the house price inflation (HPI) and interest rate risks, and possibly also mortality risk.

Allowance for any relevant guidance notes should be made, for example GN47 should give guidance on the stochastic modelling issues.

GN 47 states that the model needs to be:

- Real world
- Arbitrage free

In developing the economic scenarios, consideration should be taken of the fact that the value of houses will vary in line with residential house prices and care needs to be taken when looking at historic house price indices depending on the size of the book of business. GN 46 suggests that advice may be required from non-actuary experts and this could be an area where such advice should be taken.

Correlations should be allowed for, for example between the HPI rates and interest rates.

Early repayment rates should be dependent on how interest rates compare to the customer's fixed rate, for example lower early repayments would be expected when interest rates rise and vice versa

The model could be run as one aggregate run incorporating all stresses and stochastic inputs. In this case, the relevant tail would be taken to assess the total value of the asset in the ICA stress. Alternatively some of the stresses could be calculated separately for each risk factor.

In the case of the latter, the company should allow for the following:

- when considering the NNEG (particularly for Product A), the mortality stresses should be incorporated into the NNEG calculation since stressing mortality on its own with deterministic HPI assumptions is likely to result in zero NNEG capital requirement, and the interaction between the two will not be captured

- on aggregation, the company needs to allow for diversification benefits (ie the degree to which individual risks are correlated)

- this could be done via a correlation matrix but noting that correlations observed in normal conditions may differ from those seen in extreme circumstances

- it should also be noted that a combination of a subset of events happening at the same time, may produce a higher capital requirement (i.e. a lower value of the asset), than combining all the individual events using a correlation matrix

Scenario testing can be used to expose any non-linearity, but choosing the relevant confidence limits is a challenge. In addition, setting a 1 in 200 stressed assumption (for the calculations that are not done stochastically), is also a challenge.

The company will also need to consider operational risks and potential mis-selling risks. For example companies may set up a risk register to quantify the operational risk.

New business expenses may have been recouped at outset, but after sale there is no way of recouping more charges if expenses were to increase. The company must consider how expenses might increase in stressed scenarios.

The company should also take into account both future new business and the possibility of closing to new business.

This question was reasonably well answered, with the better students answering the precise question (i.e. how to calculate the ICA) rather than giving great detail on the potential risks generally faced by an insurer. Very few students spent any time considering whether a one year test or run off test would be best, or how to allow for the long term risks involved if a one year test were chosen.

Most of the marks awarded focused on the generic mechanics of how to calculate an ICA and few candidates extended this to then consider specific points relevant to the two products. The better answers considered the risks specific to the contract as opposed to listing all potential risks even if not relevant.

(iv) Impact on the ICA of the following:

(a) Introduction of the swap

The introduction of the swap would reduce the interest rate risk since the fixed income will now be matched with the funding costs. As it stands, the interest rate risk is likely to be significant and so this should have a big impact on the ICA.

There is a risk that the swap profile will be invalidated by decrements being different to those used in determining the swap profile so not all of the risk is hedged. However the interest rate risk will nevertheless be much smaller.

The company should ensure that there is no additional basis risk, i.e. the variable interest rate used in the swap needs to be on the same basis as that applied to the funding, otherwise the risk will not be fully mitigated.

There will be no impact on the NNEG risk because this is calculated as the difference between the loan owed and loan repaid.

The impact of selective early repayments is exacerbated when interest rates reduce and customers can get a better deal elsewhere. In this case, the company will be paying for the higher swap outgo, and the income received on the early repayment won't earn a high enough rate of interest to meet these funding costs on the swap profile agreed.

The arrangement introduces additional counterparty risk i.e. risk of default of the swap provider.

Overall it is expected that the ICA would reduce materially.

(b) Reducing the LTV

This will only have an impact on new business because the company could not ask policyholders to repay cash they have already spent in order to reduce their LTV.

Reducing the LTV allowance would reduce the capital required to support the NNEG risk on new business because the probability of the loan value exceeding the house value is lower.

This will however impact the amount of business sold and average case sizes will be lower, and could impact how long it takes to recover expenses. This could therefore have a small impact on the expense stress in the ICA.

Interest rate risk will also reduce for new business due to the smaller amount of business.

Overall would expect this to reduce the ICA for future business.

(c) Increasing the age at entry

Increasing the age at entry will reduce the expected outstanding term for new business.

This reduces some of the uncertainty in the future mortality improvements. This may therefore reduce the impact of longevity on the NNEG for Product A, and may reduce the risk of outgo being higher than income for Product B (therefore reducing capital requirements for new business).

As for (b) above this may reduce the level of sales and therefore impact expenses.

Overall we would expect this to reduce the ICA for future new business.

(d) Introduction of an early repayment penalty for Product A

This could only be introduced for new business, and even then it will need careful wording due to the possibility of complaints.

The introduction of an early repayment penalty will mitigate the risk of customers surrendering when interest rates fall. However, the risk of interest rates rising and less people surrendering than expected is actually more significant because of the loan repayments going up, and so on its own, this action is not particularly good at managing the risks and would have little if any impact on the ICA.

(e) Charging interest on Product A at a variable rate

This would reduce the interest rate risk for new business since the income would be hedged by the outgo, reducing the chances that future income is less than outgo.

Need to ensure that there is no additional basis risk, i.e. the variable interest rate used needs to be on the same basis as that applied to the funding.

The NNEG risk would increase in scenarios where interest rates are high and house values low because the loan would be higher than under the fixed interest rate approach.

This could prove unpopular in times of high interest rates and there could be even more selective early repayments. This again could impact the expenses.

Overall this would reduce the ICA for future new business but could add some operational risks due to the calculations being more complex.

This question part was reasonably well answered by most candidates correctly considering the effect on the ICAs. Some candidates differentiated themselves by doing very well. In general these candidates recognised when the impact was on the ICA as a whole or just on new business, and considered how all the risks might be impacted by the suggestion..

(v) Implications for the Pillar 1 calculations

The company will have the mortgage asset on its balance sheet, but rather than having the funding as a liability it will have the annuity liability.
The asset held could form a good match for the liability as the yield will be a fixed rate and the duration will be long as it is dependent on the life of the insured.

The yield used in assessing the annuity can be derived from the fixed rate charged to the policyholder, which may be more favourable than current bonds.

Also the credit default assumptions for this income will be diversified.

Under the resilience capital requirement, the asset will be relatively insensitive to the stress tests since the asset is the value of the loan outstanding, unless the stress would imply that the NNEG means that the asset value must be written down. Hence the yield on the annuities will also be relatively insensitive to the resilience stress.

However, the company will need to allow for any cash-flow mismatching that may occur, the income is likely to have a longer duration than the outgo. The company may have to assume some form of financing which would need to be taken into account

The company will now need future expense and longevity assumptions which need to be prudent, this increases the size of the reserves required to be set up.

The LTICR will increase with the annuity reserves.

Overall it is likely that these products will cause a strain (ie free assets will fall).

In general this was poorly answered, with very few candidates managing to score much more than a token couple of marks for commenting on the need to hold an annuity liability and saying the LTICR would increase. The better answers were those that considered each element of the balance sheet in turn.

2 (i) The company may want to raise capital for the following reasons:

There may be a need to inject capital into the company to maintain solvency position on both regulatory (Pillar 1 and Pillar 2) and realistic bases, and in one or both funds.

The company may want to improve the solvency position in order to improve the company's credit rating. This may make the company more attractive to distributors and hence may attract new business.

The NPF may not have sufficient capital to support the volumes of new business being written and the associated new business strain, and hence may require a capital injection to support future business plans.

There may be a need to fund development costs for organic expansion, such as computer hardware or software, product development, head office and branch expansion and any overseas initiatives. Alternatively, there may be a plan to acquire other companies or blocks of business and hence there may be a requirement to inject capital to cover this.

There may be a need to cover some additional, unplanned, expenses such as mis-selling costs, anticipated basis impacts of improving annuitant longevity.

There may be a desire to re-organise capital, and improve its regulatory treatment, and potentially repay some outstanding loans.

There may be a need for capital to buy-out the without profits business in the WPF in order to make management of the run-off in an equitable manner easier.

There may have been a change in risk appetite or regulations which would drive a requirement for more capital.

This bookwork question was generally well answered by most candidates.

(ii) There is a need to consider impact on both regulatory (Peak 1) and realistic balance sheets (Peak 2) as company is large.

Regulatory Balance Sheet:

The purchasers of the security will only receive repayment of the capital and interest on the nominal value if sufficient profit emerges from the business securitised. Hence the future surplus is not anticipated in the statutory valuation basis and therefore there is no need to set up a statutory liability for repayment.

Securitisation will therefore provide advances of future cashflows, and will increase assets and so provide extra capital to improve the regulatory balance sheet.

Peak 1 solvency (available capital) will therefore increase by the amount received from the securitisation net of costs.

Realistic Balance Sheet:

The RBS will already have included a value for the future profits from the in force without profits business, and so this value will decrease in line with the increase in assets from the cash received.

Liabilities will not change.

The overall impact on the realistic balance sheet is therefore likely to be minimal. Unless the securitisation proceeds differ from the VIF previously included (e.g. due to needing to make the securitisation attractive to third parties), but any impact of this is unlikely to be material.

Assets will reduce by the costs of performing the securitisation.

The RCM may reduce as no longer have downside risk on this block of future profits.

The overall Pillar 1 available capital position will depend on which peak is biting prior to the securitisation.

If Peak 2 is biting then there would be a minimal second order impact.

If Peak 1 is biting then the impact will depend on the difference between the two peaks prior to the securitisation.

This question part was well answered by those students who structured their answers rigorously, considering each Peak and component in turn. Most candidates recognised the need to consider both peak 1 and peak 2. A common mistake was not to take the answer that little bit further by not comparing the two peaks as the impact was dependent upon which peak was biting. Those who did poorly failed to recognise and explain why the impact would be minimal for the realistic peak.

(iii) The company needs to ensure that the business included is defined appropriately and fully, and that all data on policies within the securitisation is available.

There may be a requirement to add an indicator onto the policy records in some way. This would add to costs of implementation.

Surpluses from the defined business must be projected forward, and discounted back at an appropriate discount rate to obtain a value of the in force business.

The likely surplus profile going forward may be required to assess when capital might be repaid.

The projection basis would need to be realistic, so it could be based on the embedded value basis or Peak 2 basis.

The company would do an initial estimate to help identify likely amount that can be raised.

The lender may wish to restrict the amount borrowed for their own security. For example it may be restricted to 50% of the value of the in-force business being securitised.

For the calculations, the company needs to decide which assumptions need to be set and calculate sensitivity to assumptions.

The following assumptions will be important:

Investment returns

- particularly for unit-linked policies

Mortality

- particularly mortality improvements for annuities
- impact required on protection policies

Expenses and Expense Inflation.
Persistency for unit-linked business.

The company will need to provide potential bondholders with impacts on future surplus stream of all sensitivities, and the company is likely to have to provide cashflows on all sensitivities by product type.

A decision needs to be made on which product lines to securitise. For example without profits may be more attractive than with profits due to management actions.

The company will need to set up appropriate structure to the deal, for example what is the term, whether or not the deal will be underwritten in some way such that investors are guaranteed a level of surplus by a third party.

The company will need to validate the regulatory treatment of the deal.

Whether or not any guarantee be deemed a liability such that the regulatory impact is limited needs to be considered.

The company needs to consider how the capital received will be treated – Tier 1, Tier 2.

An investor roadshow may be held to attract investment – this will require a prospectus and appropriate legal documentation and the appointment of an investment broker.

The company should consider the impact on the brand and marketing image. It may look as though the company is desperate for cash. This may create unease amongst existing policyholders and hence could cause persistency problems.

The company will need to appoint, legal advisers and probably actuarial consultants to review cashflows and legally verify any information provided.

Negotiations will need to be held both in terms of the value of the business and the interest payments. In order to facilitate these negotiations, investors will want to see historic cashflows from this business – they will want to see that surplus does flow as per the projections.

In addition, the ongoing administration of the deal will need consideration

- will it require extra audit requirements
- or additional actuarial consultancy to verify surplus emerging

Consideration needs to be given as to where the capital received will be invested. It may be the intention to inject it into the WPF, where it can be used to support investment freedom or solvency, as required.

If it was instead needed to support the NPF (e.g. future new business or other development requirements) then capital would have to be transferred into the NPF. The only way that this can be done is by using the surplus to enhance

bonuses in the WPF, which can generate transfers to the NPF when those bonuses are declared.

Only (approx) 10% of the securitised surplus can be used by the NPF in this way, due to the 90/10 rule.

The deal will require a lot of documentation to be produced/provided

- product details
- valuation reports
- FSA Returns
- basis documentation
- other relevant documentation (mark for any sensible example)

The deal will also require detailed documentation that will cover

- process around future valuation basis assumption setting
- process around analysis of surplus and verification
- deadlines for payment
- agreement of actions on default
- any disclosure of future projections at end of each year
- arbitration process if any disagreements

If errors are found in the initial projections there will be a need to have identified a process by which these errors are corrected.

The impact on administration and accounting systems will need to be considered and this is likely to increase costs.

The costs of the whole deal will need to be identified and balanced against any benefits received.

Note that the AFH and WPA will wish to understand the impact on TCF, benefits and security. In addition, the PPFM should be considered, and consideration to the process if changes to the PPFM are required..

The company may wish to use a special purpose vehicle.

The company may need to put in place covenants and restrictions regarding other borrowings.

Under the current economic environment it is both difficult and costly to raise capital, and the company may find that the benefits gained are outweighed by the costs.

This was a challenging question part which very few answered well, and with few gaining any significant marks. The few that did better focussed on the process (as required by the question).

The question required the candidate to think around the subject, which involved considering what information would be required from both sides of the deal, what steps would need to be gone through in order set up a securitisation and then the ongoing management of the securitisation. It felt like a number of candidates had given up on the question before starting it and had not taken the time to think logically. Those who gained the most marks recognised the need to project surpluses forward and set assumptions. Very few considered the wealth of documentation and administration required. Some candidates discussed how only the 10% shareholder transfers from the non-profit business would be securitised, failing to recognise that the shareholders' 10% is derived from the bonuses given on with profits business and not directly from the non-profits surpluses.

(iv) The other main options for raising capital against expected future surplus are:

Financial Reinsurance which can come in different forms:

Payment of initial commission from the reinsurer to the insurer, e.g. as part of a risk premium reinsurance.

"Surplus relief"

Increases assets by more than supervisory liabilities

- Operates in similar manner to securitisation
- Identify block of business (normally without profit)
- Reinsurance premium equal to reserves held by insurer
- Capital sum advanced by reinsurer
- Repayment of capital sum made if and when surpluses emerge
- No liability needs to be set up, given repayment is contingent on surplus emerging.
- Assets increased by capital advance.

"Virtual capital"

Reduces liabilities by more than corresponding assets

- Normally a block of with profits liabilities identified
- Part of liability with longest term is reinsured
- Insurer reduces liabilities in anticipation of eventual claim recoveries from the reinsurer
- No cash is exchanged at this stage
- Reinsurance cover is reduced using surpluses as they arise from the block identified.
- Aim to be recovered well before claims are expected
- Cover will be limited to a % of expected surplus arising (typically 10-15%)
- Cover will be increased by interest, and the reinsurer will extract a profit/risk loading either within interest rate or via a fee.

To be effective from UK regulatory viewpoint, the financial reinsurance arrangements normally need to

- Involve a genuine transfer of risk
- Be legally enforceable
- Be with a reinsurer which regulator regards as financially sound counterparty and
- Where reinsurer is not itself subject to a weaker regulatory regime than the UK

Contingent Loans and subordinated debt.

Form of debt instrument where repayment is either contingent on surplus emerging or subordinated to the interests of policyholders.

Contingent loan or subordinated loan stock can improve Peak 1 regulatory solvency in same way as securitisation, because the loan repayment does not need to become a liability in the statutory balance sheet.

Subordinated Debt can qualify as upper or lower tier 2 capital depending on the duration of the repayment terms and so can increase the capital resources of the insurer.

The surpluses arising in the NPF could also be used to raise capital, for example the surpluses could be securitised or some form of financial reinsurance could be put in place.

The with profits surpluses could also be used to raise capital but again the impact depends on whether Peak 1 bites and to what degree.

Under the current economic environment it is both difficult and costly to raise capital.

The company could consider raising finance via a rights issues, this would be based on the fact that the company are expecting future surpluses to emerge.

This bookwork question was generally well answered. but given that this is very much a Core Reading based question, it was disappointingly answered but some. Although everyone had the right ideas, many simply did not cover (or "discuss") enough relative to the number of available marks.

The question explicitly asks about raising finance, so no marks were awarded to those who suggested internal management actions to increase available capital, such as negative non-unit reserves.

END OF EXAMINERS' REPORT