Actuarial Society of South Africa

EXAMINATION

October 2009

Subject SA2RSA — Life Insurance Specialist Applications

EXAMINERS REPORT

Question 1

i) Factors to consider when deciding what to do with XYZ:

This question was generally relatively well answered with the better students obtaining good marks for the question. The one area of notable weakness was that candidates tended to ignore the requirements of a minimum return. Where this was considered, candidates did not necessarily identify what impact this would have on the business and the business plan.

General points – could be made in either part of section (i):

Company ABC will want to take the course of action where it earns the highest rate of return on capital employed, for a given acceptable level of risk. It appears that the company will measure this based on Return on Embedded Value (ROEV). Thus, the impact on the projected ROEV(of the group) under each scenario needs to be considered.

It should also consider potential future changes in the regulatory environment, as well as changes in the past 2 years.

ABC will want to consider the additional capital required and costs that will be incurred under the two scenarios. In particular, they will need to meet whatever requirements (essentially injecting capital so as to achieve a satisfactory CAR ratio) the FSB deems necessary under the various scenarios.

ABC will want to consider the time-frame involved under each option and whether the FSB is likely to allow them this much time while the CAR ratio is below 1 or whether an interim capital injection will be necessary while a more detailed plan (involving one of the 2 options being considered) is prepared.

ABC will need to consider how the public will perceive its actions and what the impact will be on the share price.

ABC will also take into account a large number of other factors, such as strategic considerations and how it has dealt with other subsidiaries.

(a) Recapitalising XYZ to achieve growth (ROEV of at least CPI + 10% p.a.)

Firstly, ABC would have to decide how best to focus the investment in order to meet the proposed targets, and should develop an appropriate business plan. ABC should also consider the feasibility of the target, i.e. whether it is realistic.

In particular, ABC needs to consider what costs will need to be incurred in order to reactivate the selling of new business.

These costs could include advertising (to get brand awareness), re-staffing a new business capture department, re-staffing the sales call centre etc.

In addition, the company will need to determine what distribution methods will be used.

If they are going to use the old distribution methods, then consideration needs to be given to where leads will come from (does ABC still have access to relevant databases after its restructuring).

If new distribution methods are going to be used then consideration needs to be given to time fame and costs and whether competition is desirable within the group. One would need to consider the types of product sold by the large life subsidiary.

If alternative distribution channels are to be used by the subsidiary, for example, selling through brokers. This is likely to require changes to be made to the products to make them attractive to the brokers, for example increased commission. It may be that the existing products need to allow for this, or for additional features to be included.

Even existing products will probably need to be totally re-priced.

Funeral products are price sensitive and to achieve high volume sales in the broker market a keenly priced product is required. The broker market is probably not appropriate unless a new product range is to be launched.

Funeral policies are usually low premium policies – thus large volumes are required to make a reasonable Return on Embedded Value.

In addition, a decision needs to be made as to whether the previous product range will be sold or whether this will be enhanced (or changed completely)

While selling new products is likely to be capital intensive and result in first year losses, as long as these products are profitable this will increase Embedded Value.

It should investigate market capacity, and take into account the potential actions of competitors and whether the products sold previously are profitable and competitive.

XYZ could launch new products that might be attractive to the clients of ABC's other businesses, or by offering products that are complementary to ABC's other businesses.

Similarly, XYZ could consider introducing a range of unit linked products for investment in funds offered by the asset management company in the group. The tax position of the two entities could make this attractive.

ABC would have to consider the amount of capital that would need to be injected to support the planed new business growth and how (and over what time period) this will be repaid.

In particular the capital would need to cover:

- The costs associated with re-opening to new business;
- The costs of investment in the company's infrastructure (IT systems etc.) to support the rapid expansion plans and new products.
- The development costs associated with launching new products (staff costs, marketing materials etc.) and new distribution channels (if appropriate).
- The new business strain created as a result of writing large volumes of new business, to meet the acquisition costs and to set up the required reserves.

ABC will need to consider the extent to which XYZ would need to purchase reinsurance in order to mitigate the risks inherent within the new business.

ABC may also feel that XYZ has to reinsure some business due to the lack of expertise within the subsidiary in writing the new lines of business.

XYZ is likely to need external help in pricing the products, putting in place improved underwriting procedures and in designing and implementing adequate systems.

It could also use reinsurance to alleviate the capital strain.

ABC will need to consider the staff required to develop, market, sell and administer the new products. It needs to be sure that XYZ can recruit the necessary staff at a reasonable cost in its chosen location.

ABC will, to some extent, want to minimize the amount of capital it needs to invest in the company, and this will influence the products that the company chooses to launch.

XYZ will need to consider its investment policy and asset allocation/switching strategy as a result of the new business (particularly if it writes any linked business). In particular, it will need to consider whether it will use the expertise of the asset management company within the group to manage assets on its behalf (and negotiate a deal for this) or whether to have its own investment team and manage its own assets.

Investment of Excess Assets will need to be considered carefully. Even after the capital injection, the CAR ratio will probably remain close to 1 which will require a conservative investment strategy.

Detailed financial projections (or profit testing), showing all the expected policy cash flows (and Embedded Values) at each future point in time will be required. These projections should take into account the benefits obtained from spreading overheads over a larger number of in-force policies, and all development and investment costs (including the cost of re-opening to new business).

The projections should also take into account any impact on the life office's tax position.

The projections will also determine the statutory liabilities, the CAR and the free assets at each future point in time and the timing and size of capital injections required from ABC as well as the Cost of Capital and the ROEV for the relevant periods.

XYZ must also assess the risks inherent in investing further in the life insurance subsidiary. The risks may be assessed by carrying out sensitivity and scenario testing to look at the impact of assumptions varying from the central rate. In particular the impact on the solvency position (CAR ratio) of the company and the need (and likelihood) of further injections of capital at future points in time should be investigated.

The risk of new business falling well short of the projected figures should also be considered, as well as what this is likely to mean in terms of the future CAR ratio and any additional capital requirements.

ABC needs to consider where it might obtain the capital from in order to support XYZ in the proposed manner.

ABC should assess whether there are other areas within the conglomerate that would generate higher returns (ROEV or equivalent) from this level of investment, at an appropriate level of risk.

ABC will need to consider what the public's reaction is likely to be to their re-opening XYZ to new business and, in particular, how this will impact business volumes.

Successful growth might have a positive impact on other parts of the group.

Consider methods to reduce CAR, e.g. use of internal models, or increase excess assets, e.g. release of any discretionary margins.

Lower average costs could reduce liabilities and CAR.

(b) **Merging the two Life Companies**

Again this question was relatively well answered; however, it was disappointing to note that very few candidates considered the possibility that one life office could be on TCAR and the other on OCAR which could well result in the new combined CAR being much less than the sum of the two CAR's. A similar (but less marked) situation would occur as a consequence of two OCAR's being combined (due to the squaring and square rooting in the OCAR formula). Once again, very few students remembered that the main point of the question was to meet an ROEV target. Very few students considered the need for projected revenue accounts and Embedded Values on this basis to compare against the results of part (a) of the question. Furthermore, it was disappointing to see that a number of students thought that the lapse reserve component of TCAR was calculated in aggregate. It is key to note that the lapse reserve should always be calculated on a policy by policy basis.

A) ABC will want to consider whether or not to do a full legal merger (which would involve a section 37 transfer of the business of XYZ to the larger Life Assurer) or whether to continue with two licences but one business.

Having two licences would not solve the problem of the CAR ratio dropping below 1. Thus, this is probably not an option.

ABC would need to consider the one off cost implications of doing such a transfer and compare this to the (opportunity) cost of injecting more capital into XYZ

ABC would need to consider the impact of the merger on the balance sheet and the CAR ratio of the combined entity. If one entity is on TCAR and one on OCAR, this could be beneficial.

ABC would need to consider the implications of PGN109 which deals with life insurance company take-overs.

ABC would need to discuss the proposed merger with the FSB and an independent actuary would need to be appointed. He (or she) would need to consider the requirements of PGN108. Thus, ABC would already want to consider the requirements of PGN108 (which deals with the independent actuary's role).

B) ABC would consider whether there will be any economies of scale as a consequence of merging the two operations. This is unlikely; however, if the costs of the larger subsidiary are lower (on a unit basis) then those of XYZ, then XYZ may gain from this.

C) ABC would consider how similar the products of XYZ are to products offered by the large Life Insurance subsidiary. If they are similar, then it would be relatively easy to migrate to a new system. It is quite likely that, in the South African environment, a company like ABC will have a funeral product, so system migration should not be a real problem.

D) ABC would consider whether to recommence making sales under the XYZ brand and whether the brand still has value. If new sales are to be made then the costs of re-opening to new business need to be considered.

E) ABC would need to consider whether there will be any competition commission issues in terms of the merger.

F) ABC should consider how the policyholders of XYZ consider the image (and security) of the larger Life Insurance subsidiary and whether such a merger could have an adverse impact on withdrawals (of either company).

G) Although less likely to be important, one would also need to consider the view of the policyholders of the large Life Insurance subsidiary and how they consider XYZ.

H) ABC would consider the cost of meeting policyholder reasonable expectations (there would be a need to communicate the merger and the benefits thereof to all policyholders).

I) ABC would consider whether XYZ gets any advantage (in terms of costs or more options - not likely to be important given the product mix and the fact that reserves are likely to be low for funeral policies and we know that the excess assets are low) from merging its asset portfolio with that of the larger Life Insurance subsidiary.

J) ABC would consider whether there are rental agreements which may slow down the moving of staff to the larger subsidiary. ABC would also consider any other agreements that XYZ is locked into.

K) ABC would consider any geographic restrictions on staff (e.g. if the two subsidiaries are in different cities). Similarly, ABC should consider other issues relating to staff (e.g. the need to retrench and the cost thereof)

L) ABC would consider whether XYZ can benefit from preferential reinsurance arrangements that may have been arranged by the larger Life Insurance subsidiary.

M) ABC needs to consider reinsurance. For example, there may well be less need to reinsure - which could have an impact on expected profitability etc.

N) ABC would want to look at the budgets of the combined entity relative to those of the individual entities and they would also want to determine what the ROEV of the individual entities would have been compared to the expected ROEV on the combined entity over the next few years.

These calculations would need to allow for the costs of the transfer.

O) ABC would consider possible tax advantages if one subsidiary is XSE while the other is XSI.

ii) Figures, indicators and ratios that the FSB can be expected to be looking at:

This question tended to separate the good candidates from the mediocre candidates. While a number of candidates performed well on this question, a larger number performed poorly. As a consequence, this question tended to separate out those who passed from the rest. The fact that the first part of the question had an Embedded Value bent to it, seems to have confused a number of students and it was surprising to see how many students thought that the FSB would be especially keen to see Embedded Value calculations and Value of New Business calculations. It is important for students to understand that the primary purpose of the regulator is to ensure solvency (both current and future) and not to ensure profitability and value. As a consequence the regulator will be interested in items pertaining to statutory solvency whereas shareholders will be interested in this and in the expected value of current and future business. Embedded value and Value of New Business techniques tend to relate to shareholder interest rather than regulator (FSB) interests. Many students spent a lot of time writing about Embedded Values and Value of New Business and getting very little marks. Technically, there is some overlap in that the projections that are performed to arrive at an Embedded Value are usually projections of the statutory revenue accounts. These are, of course, something that the FSB will be interested in.

The FSB can be expected to look at the projected Statutory profits (change in excess assets) as they know that shareholders will only stand behind the company if profits are expected to be reasonable.

They may also look at the projected dividend flow. In particular, this will give them a feel for how much additional support the company can give the business (by not paying dividends) should experience not materialize exactly as projected.

The FSB can be expected to look at the projected excess assets at the end of each year. In particular, one would expect the FSB to look at the relationship between the excess assets and the CAR (i.e. the CAR ratio).

The FSB may also consider the relationship between OCAR and TCAR.

While the statutory minimum CAR ratio is 1, one would not expect the FSB to approve the Company's application to open to new business unless the projected CAR ratio is well above 1 (probably, at least 1.5 maybe closer to 1.25 if the company is on a TCAR basis) at each year end in the 5 year projection.

The FSB would probably also look at the absolute level of free assets – i.e. Excess assets less CAR (they would want to ensure that this was sufficient to withstand reasonable deviations from expected experience).

The FSB would probably require the impact of certain sensitivities (in the projection assumptions) on the above key projected statistics (namely: statutory profits, dividend payments, excess assets, free assets, CAR, CAR ratio).

The FSB can be expected to require the projection assumptions and the reserving basis. They would want to ensure that this is realistic.

In particular, they can be expected to consider the projected business volumes by distribution channel (and the reasonableness thereof), the projected mix of business, as well as the key demographic and economic assumptions and how relevant they are relative to the company's peers and the current environment.

The FSB can be expected to consider the appropriateness of the projected asset mix relative to liabilities and with regard to cash flow requirements (allowing also for worse than expected scenarios) as the FSB will want to be fairly sure that not only will the Company remain solvent in the future but also be able to meet its cash flow requirements as and when they fall due.

The FSB will want to ensure that all statutory requirements are projected to be met (e.g. assets greater than liabilities, CAR ratio in excess of 1 after allowing for disallowed assets and asset spreading adjustments, asset spreading meets the requirements of the Act etc.).

The FSB may also be interested in any guarantees that ABC may give (as the parent of XYZ) as to further capital injections if so required.

The FSB would probably also want to understand the guarantees implicit in the products being offered and how these impact the CAR and the components thereof.

The FSB would require that the projection is signed off by the company's statutory actuary.

The FSB would probably want a description of how the business plan will be achieved in addition to the basic numbers.

Question 2

(i) This question was relatively well answered which was to be expected as it related to applying basic unit pricing and fund management concepts to a practical situation. However, few candidates considered the potential differences as a consequence of internal as apposed to external managers being used.

Fund management

The company would need to consider who will perform the investment management.

The management could be performed either by an internal or external manager.

In deciding on internal or external management, the company would consider

(Note: profitability is discussed in a later section):

- If the company chooses internal management, the success of the new funds could affect the reputation of the company's investment management as a whole, including existing funds.
- By the same token, using an external manager could affect perceptions of the company's ability to manage its existing funds.
- The company may be reluctant to use the investment management of a company that is a competitor in other lines of business.
- The choice of manager would have to be consistent with the company's desired investment style, desired level of risk, and intended marketing position.

If an internal manager is preferred, the company would consider:

- Whether the expertise and capacity required to manage the new asset classes exists in the company, or whether new staff would have to be hired.
- While the asset classes may be new to the linked product, the company may already invest in these classes to back its non-linked liabilities.

If an external manager is preferred, a key consideration in the choice of fund manager is their past performance. Whilst this may not be a guarantee to the future performance it may be used as an indicator of the better likely performers. In addition the company will want to take advantage of the track record in their marketing literature. The company should consider whether there are any recent changes at the external manager may affect its performance, for example changes to the investment team.

Profitability

In deciding whether to launch the new funds, and – if so – whether to use internal or external management, the company will assess the impact on profitability.

The company will consider the competitive environment, and what it implies for the interaction between projected volumes and the level of charges.

The expected volumes would differ for internal and external management, and would be affected by reputation and market perception: the company lacks experience in the new asset classes and, in particular, has no relevant track record.

Implementation costs would have to be incorporated into the profitability analysis, including new investment management staff, changes to administration systems, training of sales staff.

The company should consider the duplication of costs arising from using an external manager.

The profitability analysis would also allow for the cost of investment management, and how it differs between internal and external management. VAT is an important element of this cost under the external fund manager option.

The company will consider whether the new funds will cannibalize existing funds. The existing funds, being equity funds, would be expected to produce greater (but more volatile) profits.

The tax position of the company would be affected by a shift away from equities. The allowable expense ratio would be expected to increase.

General issues

The company must decide whether the funds should be invested directly or via collective investment schemes (unit trusts).

If an external manager is used, access to that manager's funds may also be effected through reinsurance.

The administration platform would have to be able to deal with the vehicle chosen.

The company would have to adjust administration systems to be able to handle the new asset classes, which would affect such areas as: levying of tax (and therefore unit pricing), and the asset valuation of new investment instruments.

With a wider range of investment choices, the company should be prepared for the administrative burden of increased numbers of investment switches.

The company would have to mindful of the need to ensure that sales agents and staff are sufficiently familiar with the new fund choices to be able to provide sound advice, as well as the associated compliance requirements.

The company would have to consider policyholder reasonable expectations, including communicating the new choices to clients.

A new, broader range of investment choices may allow the company to sell retirement annuity business, as investment choice would now be able to comply with Regulation 28.

(ii)

Candidates answered this part of the question poorly. Most candidates seemed to be a little confused when it came to absolute return funds (or they gave very little commentary thereon). While absolute return funds are not bookwork, they are a common form of investment within the industry and candidates would be expected to know the basics (e.g. that benchmarks usually pertain to inflation and that the fund itself is similar in composition to a balanced or managed fund). With this little bit of understanding and the application of some higher order skills to the rest of the question, the marks pertaining to absolute return funds were relatively easy to get. Once again, this part of the question differentiated the better candidates from the rest.

General

For each unit-linked fund, the company would need to define the benchmark investment mix and the level of permitted deviation / variation in asset mix around this benchmark.

A fund may be passively managed (to track an underlying benchmark) or actively managed (whereby the fund managers trade the underlying investments in an attempt to outperform the index).

If a fund is actively managed, the guidelines should describe the investment strategy, e.g. whether the fund pursues out-performance via stock selection, sector weightings, arbitrage opportunities, etc.

The company should consider any requirements in terms of ethical or social policies.

The strategy and benchmark should be consistent with that communicated to clients, and the marketing strategy.

Another consideration would be the extent to which derivative use is permitted as an alternative to physical securities.

This will depend in part on the expertise the fund managers have in using such instruments. In addition there may be regulatory restrictions on derivative use.

It should be clear whether derivatives may be used for (e.g.) efficient portfolio construction, hedging, arbitrage, speculation.

The guidelines should describe:

- The fund's liquidity requirements;
- Changing structure;
- The fees to investment managers and any external administrators;
- Any measures imposed to manage concentration risk;
- The tax status of the fund; and,
- Any legislative or regulatory restrictions, e.g. investing only in assets admissible in terms of Schedule 3.

Specific considerations for the funds:

Fixed Interest funds

The benchmark is also likely to be based on a published index, for example those published by the Bond Exchange of South Africa.

The desired term of the investments may also be specified. Variations permitted around the benchmark are likely to be controlled via constraints on the duration of investments.

The credit risk would be managed via restrictions on the credit rating of individual instruments and the portfolio as a whole.

These restrictions may apply to both short and long term credit ratings.

Concentration risk would be managed by limits on exposure to individual counterparties.

The guidelines may describe the extent to which the manager may make use of interest rate swaps and the mix of corporate / government bonds.

Balanced funds

The company would need to consider what the appropriate benchmark asset mix should be for the combined Balanced fund. The company would need to consider the balance between maximizing returns, for example though equity investment, with reducing volatility, for example through fixed interest investment.

Investment constraints are likely to be imposed on the deviation in holdings of each asset class away from the specified benchmark. Diversification will be emphasized.

Given the potentially wide scope of appropriate investments, there will likely be restrictions on specific asset classes, such as hedge funds, or direct property investments.

In particular, any restrictions on international investments will be recorded. These will often be in line with the SA Reserve Bank's requirements for the insurer as a whole.

Another key consideration would be the typical investment mix of competitors. The company might benchmark itself using published industry fund classifications.

The fund may be comprised of internal investment in the other unit-linked funds. If so, the benchmarks and risk controls in different asset classes would be in line with those of the underlying funds. If not, the risk controls of each asset class would be described (e.g. the active risk allowed in respect of equities.)

Depending on the insurer's requirements, the investment allocation may have to comply with Regulation 28.

Absolute return funds

The benchmark is likely to be set in relation to inflation (CPI or CPIX).

This may be in the range inflation + 2% to inflation + 7%, depending on the aggressiveness of the fund.

If investment in individual asset classes is restricted to specific ranges, these ranges are likely to be broad enough to provide significant investment freedom.

The overall aggressiveness of the portfolio is likely to be limited using a cap on the combined investment in risky assets such as equities and offshore assets.

(iii)

This part of this question separated the better candidates from the rest. The question involved taking some relatively straightforward book work and applying common sense as well as limited market knowledge to the question and then an answer was easy to come by. Once again the better candidates performed quite well on this part of this question.

A **base fee,** which is the non-performance portion of the fee.
This is the fee that would be payable if the performance equals the benchmark used for performance fee purposes (the performance fee hurdle).
If an external manager is used, it should be clear whether fees are inclusive or exclusive of VAT.
The fee payable for performance equal to the benchmark of the fund should be lower than the fixed fee of a similar fund, unless there is negative participation.

A **participation rate**, which is the proportion of any out-performance which is payable to the investment manager. This may or may not include negative participation (i.e. a reduction of the total fee below the base fee if the manager underperforms.)
Negative participation may be used to ensure that performance fees do not encourage the manager to take undue risks. If negative participation is not used, then there should be appropriate risk measures and restrictions in the investment guidelines.
It should be clearly stated whether the manager's participation is in the pre- or post-tax returns.

If fees are based on upside performance only, but are only paid after downside performance is recouped, then one needs to ensure that there is still sufficient incentive for the investment manager to regain lost ground.

It is important that any fee structure aligns the interests of client and manager.

A high watermark may be used to reward only absolute growth.
Or, a performance hurdle may be used, which is the return required before performance fees become payable. This may differ from the portfolio's benchmark.

For a balanced portfolio, the hurdle could be described in terms of a nominal portfolio with a fixed asset composition, split between major asset classes.
Alternatively a peer group may be used as the benchmark.

The measurement period over which investment performance will be compared to the performance hurdle.
This must be a sufficiently long period so that out-performance is not simply due to market volatility, and underperformance is not too quickly forgotten. Often a rolling period.
The period must not be too long – new investors will expect to pay for the performance they enjoy, not that enjoyed by older clients.

The accrual frequency, which is the frequency of the performance fee calculation.
This should not be shorter than the dealing frequency of the fund, as investors would then be able to leave without paying their fair share of performance fees.

The crystallization frequency, (i.e. is the frequency of payment to the manager).

A fee cap (and possibly a minimum fee), representing the maximum (minimum) fee payable.

(iv)

This question was extremely well answered with most candidates getting high marks.

The funds to be merged would have to be similar. One aspect of this would be that the objectives of the two funds are sufficiently aligned.

If this is not the case then merging the funds may be contrary to the expectations of policyholders.

Policyholders must not be disadvantaged in any material way by a merger of funds.

The company will need to consider the costs associated with merging the funds. This should be compared with the expected future cost savings as a result of economies of scale.

It is likely that the funds may not be altered without contacting policyholders. The company will need to examine relevant past literature and policy conditions to ascertain whether notification or, even, agreement is necessary.

The decision may depend in part on IT systems and their flexibility / the resources available. If they are similar it may make it quicker and easier to perform a merger of the funds.

It is possible that unit prices will continue to be required for different groups of policyholders as a result of different levels of annual fund charges on the two products. Hence there may be no overall reduction in the number of sets of unit prices that need to be produced. Alternatively, the fee may be set at the lower level. Alternatively, this may make it very difficult to argue the merits of merging the two funds.

Policyholders would probably expect the pricing (and charges) to be the same under both funds. If different charges are levied for different groups of policyholders, this could create an equity problem or at the very least, a perception problem.

There are also operational issues to consider. For example, there is a risk that the company will price funds incorrectly where there has been a change to the IT system.

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