**ASSIGNMENT COVER SHEET**

# THIS FORM MUST BE AT THE FRONT OF EACH ASSIGNMENT

**CANDIDATES MUST KEEP A COPY OF THEIR ASSIGNMENT**

**Candidate to complete the following section (and update details in header):**

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| **Candidate Number:** 192457 | **Course:** C2B Life Insurance |
| **Date Due:** Monday 19 August 2019 at 9.00am (AEST) | |

* **Please ensure that your candidate number and course name is located on the header and footers of each page of the assignment.**
* **By completing and submitting this cover sheet you are confirming that this assignment is your own work, and all material that is used is correctly referenced and cited.**

**INTERNAL USE ONLY:**

**Assignment Marker to complete and update the following section:**

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| **Comments on Questions** |
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| **Overall Comments** |
|  |

**Assignment**

**(a)** Please see the spreadsheet.

**(b)** First of all, Green Life needs to ensure its financial strength when deciding crediting rate, especially when it wishes to credit more than what it actually earns on its investment.

Consideration also needs to be given to **policy owners’ reasonable expectation** which is usually based on the product disclosure documents as well as the past practice of the company.

Green Life needs to decide the strategy about the way and timing to recoup the excess of past interest credits over past investment returns. Although the common practice is crediting less than it earns on its investments, its reputation could be at stake and its future crediting rates may become uncompetitive.

**Lapse risk** – if crediting rates are too low, policyholders may lapse and take their business elsewhere

The crediting philosophy should also be based on the assets backing its Investment Account business, which shall be chosen with regard to policy owner reasonable expectations.

It should aim at maintaining a consistent, competitive crediting when being compared to the interest rate offered by banks, other financial institutions and other **competitors**. the company needs to ensure that they are in line with competitors or they will risk losing business…

[**Equity between cohorts of policyholders**] - Green Life needs to consider how to treat policy owners fairly as policies commence at different points in time. There will be differences in historical experience for different cohorts of policies and there may also be differences in pricing assumptions.

Given the fact that investment account policies are meant to smooth crediting rates (by paying less than the actual investment return in years when investment returns are good and more than the actual investment return in years when investment returns are poor), Green Life should consider how to mitigate the anti-selection risk by policy owners. Termination charges and/or surrender penalties could be taken into consideration.

**Smoothing of crediting rates** – the company should aim to provide a smooth return over time.

**Crediting rates should not be too high**…

* allow for some long term benefit from investment fluctuation reserve (e.g. smoother crediting rates, bonus payout on maturity…
* and also high crediting rates could cause higher lapses in years where returns are poor

**(c)** Please see the spreadsheet.

**(d)** **Advantages:**

* Having investment fluctuation reserve can **smooth the investment return**. This can be good for both policy owners and the company.
* Ensure that the company is able to keep track of the impact of any smoothing of crediting rates, and hence excess returns that are due to policyholders.
* From the perspective of the policy owners, investment fluctuation reserve could reduce the uncertainty of future return.
* For Green Life, the investment fluctuation reserve could act as a buffer to write off any decreased value of investment. Therefore, the company is more likely to be able to **meet policy owners’ expectation especially when the investment experience is poor**.
* It allows the company to have some degree of discretion to carry out the company strategy, for example by adjusting the crediting rate to serve their market strategy (e.g. credit more than competitors to attract new customers).
* The IFR also means that **changes to crediting rates do not affect profits** **unless the business is in loss recognition.**
* The deferred release of the investment fluctuation reserve along with surrender penalties could help Green Life retain the existing policy owners.
* It increases the liquidity of the company so that Green Life could pursue higher return by investing more money in less liquid assets.

**Disadvantages:**

* Policyholders may not understand the purpose of the IFR and/or the mechanics of the smoothed crediting rate.
* Hence may find the product less attractive than competing products, e.g. an investment linked product, especially in times of high investment returns.
* Sometimes the existence of investment fluctuation reserve holds the return from policy owners, which could be seen negatively by them.
* For policyholders who exit and receive the reduced interim crediting rate.
* It exposes the company to anti-selection risk when the credit rate is higher than market by taking money from investment fluctuation reserve. Policy owners may tend to surrender their policies after a higher-than-expectation return.
* Investment fluctuation reserve increases policy liability and is not being counted as capital. As a result, Green Life may be required to hold more capital in this regard.
* **Extra cost** (more staffs, more complex system etc.) may arise from managing the investment fluctuation reserve.
* Equity also needs to be balanced among different generation of policy owners. Otherwise, company will suffer reputation damage.

**(e)**

* Equities make up 15% of the fund (per (a)), assuming the same asset mix applies, the equity loss results in a 3% fall in the overall portfolio value.
* Assuming that there are no other assets affected, the portfolio return would reduce for the period to about 1% assuming the total return for the year was the 20% loss.
* This return is much lower than the previous year’s crediting rate, which means that the fund will need to try to smooth this return out.
* The ability to do so depends on the IFR and hence this loss may have a long-term impact on current and future crediting rates.
* There may be a risk of additional lapses (prefer interim crediting rates) if policyholders understand the impact and do not understand returns will be smoothed.

i. Less investment income will flow to the profit and loss statement due to the equity loss.

The change to the total policy liability along with the change to bonus credited to the policy owners will also have an impact on the increase in net policy liabilities in profit and loss statement.

*The Profit and Loss statement of Green Life for the period:*

* the impact on the P&L depends on the **IFR: if it can absorb the loss, there may be very little impact as reserves offset the movement in asset values** (and vice versa)
* otherwise the guarantee will mean that a loss may be recognised

ii. Policy liability is expected to decrease since the loss in equity may have an adverse impact on both new business volume and the retention of existing business.

As money will be transferred out of the investment fluctuation reserve to smooth the investment return under this situation, the policy liability will further reduce.

*Policy liabilities:*

* Current policy liabilities are the sum of the account balance, IFR and DAC, and as account balances are guaranteed and hence the only impact will be through the IFR

iii. The account balances for each policyholder will tend to decrease as crediting bonus is very likely to drop as well.

*Account balances for each policyholder:*

* **will be unaffected by the loss** – in future the account balances will increase with the crediting rates (discussed below)

iv. Future crediting rate will reduce to reflect the fall in the actual investment return.

Besides, it might further reduce so that the company will be able to recoup the investment loss if it has paid higher than actual investment return in the past.

*Future crediting Rates:*

* the impact will depend on the assets available in the IFR which reflects past investment returns vs. crediting rates
* **if the company has built up a reserve over the past, it may be able to smooth this out.**
* **future crediting rates will then depend on future investment returns.**
* However**, if the IFR is small (e.g. due to past losses, smoothing, higher crediting rates or the time since the fund started), this may mean that future crediting rates could be affected as well (again, this depends on future investment returns).**

**(f)** First of all, I would calculate the individual risk charge separately for the product, following the approach summarized in LPS 110.

* For insurance risk charge and asset risk charge, stress tests on mortality, lapse, inflation, expenses, equity return and property return should be applied for this investment account product to determine the impact on capital from each scenario.
* Sufficient capital needs to be held so that all surrender/terminate values can be paid immediately following a substantial drop in asset values.
* Correlation matrix could be applied to determine the diversification benefit within each individual risk charge.
* Determine if there are any **management actions** that could be taken to mitigate the stresses. Allowances may be acquired by having the appropriate mitigation plan in place.
* **Asset concentration risk charge** needs to be calculated by examining whether there is excessive exposure to single counterparties or asset classes in the current portfolio.
* **Operation risk charge** will be based on the scale of the investment account business.

After having all the individual risk charges being calculated, aggregation benefit needs to be allowed for between insurance risk charge and asset risk charge and also to see whether the combined stress scenario adjustment is needed.

The stress scenarios need to be determined in accordance to the specific profile of the company by the appointed actuary.

Policy owners’ reasonable expectation should be considered when determining management actions. For example, the ability of reducing future crediting rate is subject to policy owners’ expectation and also the competitive pressure from the market.

Investment fluctuation reserve should be removed from the capital base calculation.

The cost of capital should be considered to balance between the extra amount capital to hold and the probability of failing below the required amount capital.

* The PCA is subject to a minimum of $10m (unless APRA has approved an exclusion).
* The **key risk** is the guarantee provided by the crediting rates for the investment account policy
  + **the capital for this guarantee will be included in the asset risk stresses.**
  + Green Life will need to consider whether the **asymmetric nature of this risk means that stochastic modelling may be required** to quantify the impact.
  + **[Hedging]** however, this would depend on how Green Life manages the risk and in particular whether **hedging** or other mitigants are used to manage the guarantee.
  + Noting that the **IFR and smoothing provide some protection**.
  + Green Life will need to consider **whether to allow for management actions** and the impact this will have on the capital required in respect of the guarantee.
* Green life will have to **calculate the asset risk charge**:
  + by applying each of the stresses to the different asset classes.
  + also assess whether any concentration risk capital is required
* The calculations **allow for the impact of tax**
  + …and management actions…
  + both of which are subject to limits which are tested using the combined scenario
* **Operational Risk Charge** is calculated as a percentage of policy liabilities, with consideration for premium income and claim payments (death / lapses) in the formula
* **Insurance risk charge is likely to be zero**:
  + as the IFR is owned by the policyholders
  + if a full projection were performed, it is expected **any change in the RFBEL would be offset by a change in the IFR**.
  + **Aggregation benefit will also be zero as a result unless there is other business within the same statutory fund.**

**(g)** To: CFO, Green Life

From: Actuary

Subject: Financial reporting treatment of the guaranteed investment account

The guaranteed investment account is treated differently in Green Life when compared to a non-life Company.

Unlike fund management companies where only “fees less expenses” approach could be used when determining profits, investment income on policy owner assets, policy owner tax and increase in policy liabilities need to be considered in addition to investment income on shareholder assets and shareholder tax. All of these items should be listed explicitly in the income statement of Green Life.

* A fund management company may offer similar products to the investment account product offered by Green Life,
* However, **their products would generally be directly linked to the assets backing the fund** (investment linked) and hence do not offer the same type of guarantee as the Green Life investment account product,
* Furthermore such companies (not life insurers) **do not have the same capital requirements** as a result.
* **Insurance companies are subject to the regulations in the Life Act and associated Prudential Standards**.
* These define the **requirements for holding capital** and policy liabilities including **an** **allowance for the risks associated with the guarantee.**

**(h)** To: Green Life Board

From: Actuary

Re: Guaranteed minimum return

The introduction of the guaranteed minimum return in the investment account product will expose Green Life to the following risks:

* There is an asymmetric investment risk where future bonuses or interest credits can be added to policy values, but Green Life cannot subsequently take it away if investment losses occur.
* Green Life will be required to hold more capital to support the business with the guarantee feature. The chance that Green Life’s solvency position will fall below the required amount will increase if no additional capital is injected.
* If Green Life decides to hold more capital, the cost of extra capital could be a burden to the company.
* The cost of guarantee may be expensive, resulting policy owners withdraw their policies.
* Potentially more complex admin systems and more staffs need to be involved to manage the guarantee feature. **Operational risk** exposure will be higher as errors are perhaps more likely to occur.

To evaluate the cost of guarantee, considerations should be given to:

* The target asset mix and the expected return thereof. The volatility of the target asset mix will also have an impact on the cost of guarantee.
* The expense arising from the management of the guarantee. The expense assumption tends to vary from the current one. Some allowance should be made to account for the extra expense.
* The cost of the extra capital, given the Green Life has to hold more capital for the guarantee provision.
* The lapse assumption is likely to be different from the current product due to the new guarantee feature.
* Future experience change. If this new feature will attract more people, there might be a capital strain due to the high acquisition cost like commissions and other initial expenses.
* The cost of hedging should be considered if Green Life plans to take actions on hedging the downside investment risk.
* Profitability. The guarantee feature will make the investment account product a relatively capital intensive product. The Board’s target profitability requirements on capital should also be allowed for.

Kind regards,

Actuary

The Green Life insurance product **already provides a guarantee in that the crediting rate cannot be negative**:

* hence the crediting rates reflect a smooth investment return
* and the assets are closely matched to the target investment mix
* in years of poor investment returns, crediting rates can be reduced and/or the IFR can be used to provide some return to policyholders
* a guarantee of 4% (and fluctuating with future inflation) **reduces the ability of Green Life to smooth crediting rates**

**Introducing an additional guarantee in the form of a minimum return would increase the cost of providing the product** as the guarantee would have to be funded:

* **fees may need to be increased** to allow for this cost
* the guarantee will also need to be managed effectively and a **hedging program may be needed** to do so
* **this increases the operational risk and complexit**y in managing the assets and the guarantee.

The **asymmetric nature of the guarantee** may also mean that the liability valuation will need to allow for this risk and the **guarantee will also increase Green Life’s capital requirements**.

**(i)** To: CFO

From: Actuary

Re: Changes to current investment mix

If we would like to reduce the overall level of risk by changing the investment mix, below are the factors that need to be taken into consideration.

* Presumably, the target new investment mix will result in a reduction in the capital requirements. The decrease on required capital should be assessed in advance according to the new investment mix so that Green Life could decide whether such a change to the mix is an effective way to substantially reduce the risk.
* The feasibility of the change is another key factor as not all assets, like property, can be sold in a timely manner. Also, the target assets might not be available on the market to buy in. Any rapid change to the investment mix may result in significant losses.
* The new investment mix should be consistent with the policy owners’ reasonable expectation which is set in the policy disclosure statement or marketing material.
* The competitiveness of the product needs to be considered. The reduction in new business volume can be foreseen due to the lower expected return from the new asset mix if no other management actions are taken by Green Life.
* Equity needs to be ensured between difference generations of the policy owners.
* Tax liability may arise from the transaction if there is any realised gain.

To implement this change, the first step is to determine the target asset mix which could help achieve the objective of reducing the investment risk.

The second step is to identify appropriate assets in the market which are readily available and analyse the cost of transaction.

The third step is to implement the plan in a timely manner.

Both of the expected return and volatility of the fund will reduce after changing the investment mix given the fact that Green Life will invest more in cash/bonds and less in equity and property market.

The best estimate of future smoothed returns will become more stable and predictable as the volatility of the portfolio reduces. There is also a pressure for reduction in the future returns.

As intended, less capital will be required to support the investment account business due to the fewer portions of risky assets.

Kind regards,

Actuary

* In making this change, the CFO should consider Green Life’s **risk appetite** and **product strategy**, including whether it already offers other products that are backed by an asset portfolio with a lower risk profile

***Lower return and volatility:***

* Changing the investment mix to reduce the risk within the fund would also **reduce the returns** that the fund can expect to earn in future, **also reduce the volatility** of future returns.
* Hence would have a consequent **impact both on future crediting rates and on the ability of Green Life to smooth returns** **through building up an IFR over time**.
* Green Life would expect that future smoothed returns would be lower than in the past.
* The impact will depend on the asset mix that Green Life moves to but could be substantial if equities or property investments were reduced in favour of cash and bonds.

***Competitiveness:***

* The change may also **affect the competitiveness** of the product relative to other companies offering similar products
* The company will need to consider **competitor’s asset allocations** to consider whether the change may influence future customers (e.g. other companies may offer higher expected crediting rates based on the original asset mix offered by Green Life)

***Fee assumptions:***

* The reduced returns could also mean that Green Life **should reduce its fees to reflect the reduced** risks and management requirements

***Expectation / Equity regarding policyholders:***

* The company should consider the **risk appetite of its policyholders** who may not wish to decrease the expected future crediting rates
* Green Life also needs to consider whether the change would be **fair to existing customers who may have invested in the fund with an expectation of future crediting rates** reflecting the target asset mix
* will need to consider **their current investment policy / mandate and customer documentation/expectations**

***Capital:***

* Capital requirements would likely be reduced which would make the product more efficient from a capital perspective

***Steps required to implement this change in investment mix:***

* If it is determined to proceed with the change in investment mix, this will need to be reviewed by the **Appointed Actuary**
* and investment mix guidelines updated and provided to the investment custodian