**2016 S1**

**Q1** a)

* Capital Base = Net Assets – Adjustments to Net Assets
* In the absence of deferred tax and other adjustments, this becomes:

Capital Base = Net Assets – (Adjusted Net Policy Liability – Net Policy Liability)

* Adjusted net policy liability = 0, since RFBEL < CTV = 0 as provided in the assumptions in the spreadsheet. So, Capital Base = Net Assets – Net Policy Liability = Cash + Investments

***When Net Policy Liability is negative, Capital Base = Net Assets – Net Policy Liability***

***Termination values = CICP + IBNR + RBNA + DLR + UPR + Surrender Value = 0***

b) iii.

**The Appointed Actuary would be responsible for recommending the best estimate assumptions but not the implementation of management actions.**

Management would limit or eliminate dividends in response to the stress and to avoid breaching capital requirements.

Other reasonable actions that management would need to consider, for instance:

* Whether they would initiate a repricing of the portfolio to offset the impacts, and when they would do / be able to implement this,
* Whether they would limit new business sales to improve capital strength,
* How these considerations feed into their goal of growing their business, and whether the resulting profit margins are still favourable enough for them to consider continuing,
* Consideration of capital raising during the scenario, this could include Tier 2 capital, particularly as the existing shareholders are not in a position to inject additional capital.
* How the changes in market conditions may impact on their capital management going forward.

d) **Existing Capital Position**

The company has sufficient capital to fund planned growth and dividend payouts. The projected results indicate the company could support either higher sales or a larger dividend payout to shareholders.

**Results of Stress Tests**

A breach of Target Capital occurs in year 2 and a breach of Regulatory Capital Requirements occurs in year 3 following the stress and changes to assumptions.

**Appropriateness of Target Surplus**

A 20% target is insufficient.

Raise elements of LPS 110 / CPG 110 in a discussion of how to set a good target surplus policy. For example:

* Considers the risk appetite of BOI,
* Considers the dividend policy and business plans of BOI (i.e. the capital strain of business growth against the willingness to forgo dividends when required),
* Considers the lack of access to new injections of shareholder capital for BOI,
* Uses stress testing or risk-based approaches to determine appropriate levels of target capital (e.g. setting a target surplus that aims to reduce the risk of breach to 5% over a 3 year period).

**Q2** a) [State the obvious] The formula for calculating the policy liability is:

PL EOY = Value of supporting assets (VSA), less the cost of the current year best estimate bonuses less the shareholder profit margin on that bonus

Where the VSA is calculated as:

* The policy liability at the end of the previous reporting period
* Plus the cost of declared bonuses at the end of the previous period
* Plus the actual policy related cash flows and investment experience
* Less the expected shareholder profits emerging over the period
* Less the non-investment experience profit.

Explanation of methodology:

* The current year best estimate bonuses are excluded from the policy liability so that they are released into profit, and therefore allocated to the policy owner and shareholder.
* The investment returns are kept within the policy liability to smooth the volatility of profit from one year to the next.
* The supportable bonus is determined such that the present value of outflows less present value of inflows plus present value of bonuses and profits is equal to the value of supporting assets.
* Interim bonuses are deducted from the policy liability because they are a distribution of profit, not an allocation of it.

It differs from non-participating business:

* The discount rate is based on the expected return of the underlying assets, whereas for non-participating the discount rate is risk free.
* Includes a component for the present value of policy owner bonuses in the policy liability. For non-participating business there are no policy owner bonuses.
* Economic assumption changes are not released through profit, whereas for non-participating business they are.

b) Shareholder profit:

960,000 = 20% x total profits

Shareholder retained earnings BOY:

12,562,500 = 25% x Policy owners’ retained earnings BOY

Interest on Shareholder retained earnings:

502,500 = 25% x interest earned on PHRE *OR* = SHRE \* interest earned on PHRE / PHRE

Distribution to the shareholder upon bonus declaration:

825,000 = 25% x cost of declared bonuses for the year

Shareholder retained earnings EOY (after bonus declaration)

13,200,000 = Shareholder retained earnings BOY + interest + profits - distribution to SH

c) To: CFO

From: An Actuary

Re. Participating Business Portfolio Management

This note has been prepared to address your ideas to reduce the risk of a tontine occurring for the participating business portfolio. I address each of your ideas in turn below.

**Distributing Excess Policy Owners’ Retained Earnings to Shareholders**

The Life Insurance Act (1995) only allows Australian policy owners’ retained earnings to be distributed to Australian participating policy owners, so legally this is not an option.

**One-off Bonus Declaration and increasing Future Bonus Declarations**

The impact of this would be as follows:

* Policy owner retained earnings – the policy owner retained earnings will decrease by the cost of the declared bonuses.
* Policy liability – the policy liability will increase, but probably by less than the cost of the declared bonuses, because the surrender value basis will likely be more conservative than the policy liability basis.
* MoS profit – **There is no impact on the MoS profit because the bonus declaration is only a distribution of profit from policy owner retained earnings**.

**Purchasing a Participating Book from another Life Insurer and having one bonus series**

There are a number of issues to be considered for this option:

* Equity between the two portfolios of policy owners – PS 200 requires that advice on the bonus distributions considers the equity between policy owners. It is unlikely that equity would be achieved in this case, because one group of policy owners has built up the substantially more retained earnings, and it would be unfair to share this with the other group policy owners.
* The bonus structure of each portfolio – if they are very different it will be difficult to merge the two portfolios together under one bonus structure because the terms and conditions of the policies are unlikely to allow a significant change to the bonus structure.
* Whether a new bonus structure can be sufficiently similar to the existing bonus structures, such that policy owners expectations are met regarding the level of bonuses they will receive in the future. This is particularly important if the each portfolio has a different philosophy for distributing bonuses in the past.
* Any adjustments which are needed to the expense allocation process, to accommodate the merged fund and how this impacts on benefit expectations.
* How the costs associated with the merger will be allocated, and whether the policy owners are expected to pay.
* The asset allocation for the existing portfolios and whether a new allocation can be developed that is sufficiently similar to each and within policy owner’s reasonable expectations.
* The impact that substantial surrendering of policy owners would have on future profitability if they do not like the merger process or the communications around the process.
* The impact of the merger on the security of the benefits of the policy owners of each life company and therefore the risks which the shareholder is taking on, in terms of how it impacts on the amount of capital required and the level of target surplus after the merger.
* Mortality experience of the two books – how similar is it. Need to consider fair treatment of mortality profits. This will also affect the future bonuses emerging, if there is cross-subsidisation in this regard.

**Using Policy Owners’ Retained Earnings to Fund Life Insurance Business**

* This would not be a viable option as the Life Insurance Business is written in a separate Statutory Fund.

**Other Issues**

* If Trigger wasn’t open to purchasing a participating book from another life insurer or re-opening the participating book to new business, then making a one-off bonus declaration and increasing future bonus declarations would be the only realistic option to prevent a tontine. However the size of the one-off declaration needs to be careful consideration – too small and the tontine problem may re-emerge in the near future, too large and the profit distribution may turn out to be inequitable in the long term if experience deteriorates (as policyholders who have terminated will have taken more than their fair share).
* System upgrades and staff training would be required when purchasing a participating book of business from another insurer, since the products may have slightly different features. Trigger Life’s administration system may not be able to administer all policies and an upgrade may be required.
* The impact of any proposal on the capital requirements needs to be considered. Trigger needs to maintain an appropriate level of capital at all times, with some methods of distributing the policy owners’ retained earnings having a greater capital burden than others.
* The retained earnings can distributed via terminal bonus instead. **This would be relatively easy to administer, and the terminal bonus amount can be varied depending on investment experience.** This can be structured as a percentage of the policyholder’s asset share (which is the premiums less expenses and claims accumulated with actual investment returns). There is also lower capital requirements associated with this method as compared to declaring a higher reversionary bonus.

I hope this makes sense. Please let me know if you would like to discuss these further.

Kind regards,

An Actuary

**Q3** a) *The financial implications of the proposed 20% increase in premium for both inforce*

*and new business must be analysed, including covering the following:*

* Expected profit margin as at December 2015, when the basis change occurs.
* [New business projection] Allowing for future new business in the next three years (as an example), the expected progression of profit margins over the next three years.
* Whether new business profit margin with the new price to prevent further deterioration of overall profit margin in the future.
* Sensitivity test whether the existing margin can withstand experience deterioration due to unforeseen events.
* In particular, consideration should be given to the potential shock lapse rate that will occur due to the substantial premium rate increase.

*In relation to the implementation of the new Disability Income standard table, issues / considerations include:*

* Adequate documentation on the implementation of the new basis into the valuation models, to ensure a suitable audit trail.
* Ensure adequate testing is performed on the new valuation models to ensure the **Appointed Actuary can sign off on the adequacy of policy liabilities** for the 31 December 2015 valuation which will use these models.
* Consideration of the capital implications of the new basis, given the higher incidence and lower termination rates implied for part of the portfolio.
* Consideration of using reinsurance to reduce the potentially higher capital requirements as a result of implementing the new table, given Bambury Life currently doesn’t have any reinsurance. The reinsurer can also provide useful insights, such as the lapse experience of other companies which have repriced as a result of adopting the new standard table.

LPS320 on the proposed price increase prepared by the **Appointed Actuary** should be provided to Management and may also be provided to the Board to give them appropriate actuarial advise on the proposed changes to the product.

Sales/Distribution team and Product team should be consulted ensuring the proposed price increase is not going to have a detrimental impact to competitiveness and future volume of sales (e.g. by considering how competitive the increased premiums are in the market).

The IT team should also be consulted to understand whether there are any system and administrative issues with implementing the proposed price increases.

*The signoffs required in relation to the CEO’s recommendation include:*

* Signoff from the Auditors. Because the price increase is expected to occur 6 months later than the valuation date, it is important to consult and receive a written/verbal approval from the Auditors. To give comfort to the Auditors that it is reasonable to factor in a future premium increase, the company could:
* Provide evidence that this pricing initiative is progressing well;
* Provide written representation from management noting the commitment to increase premiums;
* Submit a full appreciation of the financial implications, including consideration of potential shock lapses; and/or
* Demonstrate transparency with the Board and the Board Audit Committee.
* Sign off from other key Finance stakeholders such as the CFO that they understand the financial implications of the premium rate increase.
* Sign off from the Head of the sales/distribution/product, the Head of IT and/or the Head of operations/COO on the proposed premium increases, to ensure appropriate consideration has been given to the sales and administration implications.
* Sign off from the valuation manager / head of the valuation team that suitable testing has been performed and the new models are ready to be used for valuations.

b) Not a good example

[Claim experience definition] Claim experience item in AOP = Expected claim cost less the Actual claim cost (including increase in IBNR and RBNA reserves over the period for both Expected and Actual).

*Various components of the total claim cost are as follows:*

1. Expected or actual $ amount of DII benefit paid to claimants during the period.

* The expected payment will increase due to expected new claims during the period which are expected to result in a $ claim payment. No changes to actual $ amount of DII benefit payment.

1. Expected or actual $ amount of DII benefit payable to claimants during the period.

* The expected amount should be offset by an expected release in Claims in Course of Payment (CICP) reserve of the same amount. The expected release in CICP reserve will increase by the same amount to offset increase in expected payment in the period. No changes to actual release in CICP reserve.
* The actual $ amount of DII benefit paid to claimants during the period should be mostly offset by actual release in CICP reserve as a result of unwinding of the expected benefit payable during the month. The offset may not be exact because of various reasons such as legal settlement for any in dispute claims.

1. The expected or actual release in CICP reserve due to benefit payable.

* The expected release should also be very close to the actual release in CICP reserve. This could be different if there are any data changes that have not been allowed for in the expected (for example, changes to the event date, as more accurate information becomes available).

1. Expected or actual increase in CICP reserve for policies that were still on claim since the beginning of the period.
2. There will be one period increase in claim inforce duration and will be based on the same number of remaining payments. In other words, excluding the impact of the release in CICP reserve due to the current period benefit payable. This is most likely to be an increase as now the claims have been inforce for another month; the termination assumption will hence reduce, resulting in a higher CICP reserve.
3. With the new DII tables, the increase to continuing claims will be more significant as the termination assumption differ significantly from Bambury’s current basis – with much lower termination rates in the new table for claims beyond a five year duration.
4. Expected or actual decrease in CICP reserve due to policies been terminated during the period.

* As the overall CICP reserve will increase quite significantly after adopting the new DII table, the expected and actual release in CICP reserve will hence be more material.

1. Expected or actual increase in CICP reserve due to new claims since the start of the period.

* Expected increase in CICP reserve will be larger than before after adopting the new DII tables as the incidence rates will project more potential new claims.
* With every new DII claim, the new DII table will result in a larger increase in CICP reserve for every claim as a result of generally lower termination rates.

After the implementation of the new standard table, overall the claims experience loss/profit should be smaller if the new basis more accurately reflect Bambury’s actual experience.