**2018 S1**

**Q1** a) Not applicable any more. Calculate ARC.

b) • Run-off of Group Business.

Over the next 3 years, it is expected that the majority of our group business liabilities will have run-off. We currently hold regulatory capital (the Prescribed Capital Amount or “PCA”) for insurance and asset risks on this portfolio. This capital is in addition to our estimate of outstanding claim reserves.

The outstanding claim reserves represent our liability for claims that have been incurred but have yet to be reported (IBNR). As claims get reported, we will release the IBNR and the associated regulatory capital. So, over the next 3 years and assuming the business runs off in line with our expectations, we expect surplus assets to increase over this time. The increase reflects the fact that, if the business runs off in line with expected, the PCA will not be required and hence will be available for use elsewhere in the business.

• Expected growth in Level Premium Business

As we are projecting the business to grow quite strongly, we require capital to fund this growth. This capital is to fund acquisition expenses such as advertising costs. This expenditure will reduce surplus assets.

In addition, given that ABC Life have limited capacity to raise capital, this growth needs to be funded from our existing shareholder capital as well as the earnings from our existing business.

• Asset concentration risk of reinsurance asset

The level premium business is heavily reinsured. Over time, and as the group business runs-off, the value of the reinsurance asset on the Balance Sheet will increase and the proportion of total assets related to reinsurance receivables will increase. At the moment, the level of the reinsurance asset is below the limits prescribed by the regulator. At some stage in the future, we may incur a capital charge, known as the asset concentration risk charge, due to our exposure to Global Re.

The charge represents the exposure level above the prescribed threshold. If we were to incur such a charge, surplus assets would reduce. This has implications for our reinsurance strategy and our overall insurance risk appetite

• Operational Risk Charge

Large premium income growth may trigger a non-zero (or higher) “growth component” of the Operational Risk Charge. As a result of the increased capital requirement, surplus assets would reduce.

c) i. The PCA will be expected to reduce following the implementation of this strategy. This is **because for a given change in the real interest rate, the assets and liabilities will move in the same direction.** Under this strategy, the value of assets and liabilities will not change under an equity stress scenario.

In addition, there would be a reduction in the aggregation benefit offsetting some of the benefit with the lower ARC.

ii. As the expected return for equities is higher compared to government bonds, we would expect profit over the next year to be lower as a result of this strategy.

However, we would expect that the profit outcomes are less volatile as equity returns are more volatile than bond yields.

iii. The run-off of the group business coupled with the growth of the level premium business will mean that the duration of the liabilities will reduce in the short-term. So, assuming that the duration of assets remains unchanged, the asset risk charge will increase as the duration mis-match will increase.

In light of the duration mis-match highlighted above, we may consider additional strategies that could be employed. One such strategy is to ensure that there is frequent re-balancing of the asset portfolio to match the duration of the liabilities. However, we need to balance this against the level of transaction costs and the complexity this brings.

**Q2** a) PL = BEL + PVFP for each RPG = (-1 + 0.5) + (- 0.6 +0.6 + 0.3) = -$0.2bn

b) i. It would be similar for Death product since the current profit carrier claim is generally in line with the number of in force, i.e. the unwind trend of the PV of expected claims and inforce number are highly related.

For DI product, the emergence of profit may be slower as there is not necessarily a decrease in inforce while claims occurs. People could remain inforce as disabled lives and profit won’t be released until they are off the claims.

* If the expected number of policies in force becomes the carrier, this means that profit margins will be released in line with the lapse (and to a lesser extent, claim) pattern of the policies.
* Claims runoff patterns depend also on lapses but are also dependent on the increasing age of the policyholders, with claims generally being higher for higher ages
* Hence policies in force runoff quicker than claims which means there will be more profit accelerated under Alternative A than the status quo.

ii. For DI product, ~~the slower trend of profit emergence leads to a higher policy liability~~ (PVFP and PL does NOT change, neither does capital. The only changing part is the timing of profit release), hence more capital is needed. ANW is reduced. Given the cost of capital, EV tends to decrease although VIF increases as more capital will be distributed to the shareholders.

* [**State the Obvious**] EV is equal to the ANW of the entity + Value of Inforce (VIF). The ANW is not impacted by the shift to Alternative A.
* The VIF is based on distributable cash flows (shareholder profits and net capital release) and **the only cash flow that changes is shareholder tax.**
* The reason for this is that the excess capital is the primary driver of the distributable cash flow each year rather than the profit and **capital has not changed**.
* **Higher profits in earlier years mean higher tax is paid in earlier years**.
* **Higher tax in earlier years will reduce the EV as the discounting effect** applied to the cash outflows in respect of shareholder tax will be diluted.

*From BOE report:*

*There would be no change in distributable profit gross of tax. Distributable profits are net of tax and tax would change as a result of the different accounting profit emergence.*

c) i. BEL = (PV Claims + Expenses – Premium) = -1.0 and PV of Premium = 3,

==> PV (Claims + Expenses) = 2

CEL = 1.1 \* PV (Claims + Expenses) - PV of Premium = 1.1\*2-3 = -0.8

PVFCP = PL – CEL = -0.5 – (-0.8) = 0.3 as PL remains unchanged.

ii. Dear CFO,

In response to your concern regarding profitability for the next 3 years in the event Alternative B were implemented, please note the following:

* There will be a **reduction** in the **planned** profit release given the PVFCP is lower than the PVFP
* However, we should see an **increase** in profit from cash outflows for claims and expenses being lower than the corresponding CEL movement (release of prudence). This is because there is now prudence built into the projected CEL cash flows for claims and expenses.
* These two effects (from reduced planned profit release and higher variance between actual and planned profits) are expected to largely offset one another such that any residual impact on actual profits is small relative to the change in planned profit release (although there will likely still be some change)
* Note that given the business is highly profitable it is unlikely to go into loss recognition as a result of Modification B

Kind regards,

Planning Actuary

d) i. PVFP = -BELExAcq = -(BEL - acquisition costs) = -BEL + acquisition costs; and PL = BEL + PVFP

==> PL = BEL - (BEL - acquisition costs) = acquisition costs

PL immediately after Acq Expenses

= (BEL – Acq Expenses) + PVFP

= (BEL – Acq Expenses) + (-BELExAcq)

= (BEL – Acq Expenses) – (BEL – Acq expenses) = 0

ii. Given PVFP is larger, the profit will be released faster if the profit carrier remains unchanged.

* The new business will **show a substantial loss in the first year given that there is effectively no deferral mechanism for the acquisition expenses**
* Given the PVFP is higher at outset this will mean that the **profit in year 2 and each subsequent year will be higher** under Alternative C than under LPS 340.

iii. Overall profit emerging over the lifetime of a policy will not be affected.

Adv: Extra asset is needed to support the initial loss and this provides better prudence for the business.

Disadv: Prudent reserve comes at a cost; (there being no change to the new business strain from a capital point of view under the proposal)

Profit seems to be more fluctuated and could not reflect the true profitability of the company especially when selling a lot of new business

Dear Industry Body,

Please find below our view of the advantages and disadvantages of adopting Alternative C which we would like incorporated into an industry response:

First of all we would note that any change in the reserving process does not impact the overall profitability of the business over the lifetime. The same total profit will be earned, just the timing will be different. The same cashflows will be incurred at exactly the same point in time.

However, regarding advantages we see that there could result a change in company behavior that would be advantageous to all parties

**Advantages**

* Encourages lower acquisition costs: By forcing acquisition expenses to come through as a loss in the first year, one might expect companies to focus more on reducing up front commissions paid to advisors over time and pursuit of cheaper distribution channels. If this occurs it should ultimately flow through as a benefit to consumers, with increased servicing by advisers to ensure policies are maintained and not lapsed.
* Closer alignment to capital standards: Adoption of Alternative C would create a profit signature which is much closer to the signature of distributable profits generated by the YRT business, and remove the disconnection which can cause confusion for some stakeholders.

**Disadvantages**

* The main disadvantage is that it will not reflect a realistic measure of profitability. Companies growing rapidly will look less profitable and will have to adopt other measures such as embedded value to explain themselves to the market.
* Short term profit reduction: The change is likely to mean substantially lower profits for the next 3-5 years compared to what was previously expected by shareholders and may cause unnecessary concern for investors who are not accustomed to taking a long-term view.
* Whilst it may be possible to restructure the commission, it is not possible to restructure other operational acquisition costs such as underwriting, medicals, sales support and policy issue administration. These costs are often equal to the first year’s premium.
* Profit volatility: Profits will be directly exposed to the quantum of acquisition expenses in any given year, and so volatility in acquisition expenses will flow straight through to reported profit implying more volatility.
* Usage of taxable losses: The change may mean substantial taxable losses for some entities in early years which may not utilised, and reduces Government taxation revenue.

Kind regards,

CFO of Safe4Life

**Q3** a) i. 80% of investment return are allocated to policy owners.

The drivers of the PRP change in SF1 are:

• **No bonuses were paid out of the PRP over the year**. Bonuses are only paid out at maturity and there were no maturities over the year. **As no bonuses were paid, there was no change to the PRP (and hence no cost of declared bonus).**

• Policyholders are entitled to 80% of the profits on the conventional book. As profits emerged over the year, the PRP increases by 80% of the profit ($2m) earned in the year.

ii. Given the retail business in SF2 is in run-off, capital is expected to be released gradually. So the net assets are expected to increase.

Profit for the year can be different to the change in net assets as a result of:

* Net Assets (t) = Net Assets (t-1) + Profit (t) + Capital Injection – Dividends
* So, in this instance, the additional information needed would be details of any capital injection or dividend paid to its parent.
* In this situation, as the change in net assets is bigger than the change in profit, a net capital injection occurred. This is not unexpected for SF2 of SYD Life given the business needs capital to grow so strongly.

b) i. for DI business in loss recognition, the expected profit is negative.

More lapse means the release of negative profits in the book, which will be favourable.

* [State the obvious] The lapse experience on disability income business only impacts active lives as those on claim will not lapse (as they are receiving a payment)
* The DI book is in loss recognition and the policy liability for the active lives is positive. We expect that the net cashflows that we pay out over the year (including interest on the opening liability) will offset with the reduction in liability over the year.
* If more people lapse compared to what we were expecting, this liability will run-off (reduce) faster and we won’t pay out as much than what we were expecting thus creating a profit in the period.

ii. Expected investment returns were already allowed for in planned profits.

* [State the obvious] The total investment income in the P&L and earnings on shareholder capital and retained earnings are not equivalent measures. However, they are related.
* The investment income in the P&L reflects the actual investment income that we have earned in the period based on the actual assets we hold. In our case, it would be interest/coupons received and any realised/unrealised capital gains and losses.
* In the AoP, we divide investment earnings into 2 parts:
  + [**Planned profit margins include the expected earnings on the policy liability**]: Earnings on the opening policy liability. This is based on the discount rate used to determine the opening policy liability. These earnings are included in the planned profit margins; and
  + [**Earnings on S/h capital and retained profits include the actual earnings in excess of the PL**]: Actual investment earnings earned in excess of these earnings on the opening policy liability.
* For the lump sum business, the earnings on the policy liability will be negative as the liability is negative but will be positive for disability income business.
* There is no error in the AoP. The dynamic is just presentational. [State the obvious] The total profit from the AoP matches the profit in the P&L.

iii.

* The assumptions underpinning the policy liability did not all eventuate in the current year.
  + There were no non-economic experience profits in the period.
  + [State the obvious] However, the discount rate turned out to be different compared with the expected position last year.
* The loss has arisen due to the **asset liability mis-match** for assets backing the DI RPG. In particular, the change in the discount rate used to determine the policy liability did not fully offset with the change in the value of assets backing the business.
* In particular, the net policy liability is bigger than the size of the total fixed interest assets with SF2.
* The loss could be mitigated by:
  + Allocating assets to the DI RPG sufficient to cover the total policy liability (active lives and disabled lives)
  + Matching the duration of the assets to the duration of the liability. This may need to be done in 2 parts as the duration of the active lives and disabled lives portfolio may be different.

c) i. Corrected PVFP = - 100 +41.8 – (-90) = 31.8

*After the model correction:*

* No impact to profit in the current period. The increase in BEL of $10m can be absorbed in the current profit margins leaving the liability unchanged (and hence no profit impact). The value of margins after the model correction are $31.8m

ii.

* EV will reduce as the value of future profits is reducing. There will also be a cost of capital impact but this has not been considered.
* EV impact will be less than the BEL impact as, under a Traditional EV, future cashflows are discounted using a risk discount rate which is higher than the risk free-rate used in the BEL.

*From BOE report:*

*Some candidates got side tracked by issues to do with franking credits and tax rather than the main issue of valuing discounted future profits.*

iii.

* The DI BEL would increase as the model change is adverse
* If the model error impacted DI, **there would be no profit margins to absorb the change in BEL since the RPG is in loss recognition**
* Loss recognition balance would increase with the increase impacting profit in the current period. That is, profit in the current period would reduce by the size of the BEL change.