



SINGAPORE  
ACTUARIAL  
SOCIETY

# **SAP L03**

## STANDARD OF ACTUARIAL PRACTICE FOR APPOINTED ACTUARIES ON PARTICIPATING FUND MANAGEMENT FOR LIFE INSURANCE BUSINESS

Updated on 31 March 2022

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## Article 1: Objectives

- 1.1 For the purpose of this document, an Appointed Actuary is defined as a member of the Singapore Actuarial Society (SAS) who is appointed as the Appointed Actuary of any life insurance company registered in Singapore and approved by the Monetary Authority of Singapore (MAS) under section 31 of the Insurance Act.

This document has been prepared as a Standard of Actuarial Practice (SAP) for members of the SAS appointed as appointed actuaries of direct life insurance companies advising on the management of participating fund business.

This SAP governs the conduct and practice of any member who accepts an appointment as an appointed actuary. If a member has any concerns about the operation of this SAP then the issue should be referred to the Council of the Singapore Actuarial Society.

- 1.2 This SAP is meant to supplement the Insurance (Valuation and Capital) Regulation 2004, MAS Notice 133 – Notice on Valuation and Capital Framework for Insurers and MAS Notice 320 – Management of Participating Life Insurance Business.

## Article 2: Scope

- 2.1. Some of the language used in all SAPs is intended to be interpreted in a very specific way in the context of a decision of the Appointed Actuary. More details can be found in SAS SAP X01.
- 2.2. Members of the SAS who undertake activities covered in this SAP should make reference to their compliance with this SAP.
- 2.3. The areas of practice covered in this SAP are:
- Article 3 – Bonus Determination
  - Article 4 – Fund Management
  - Article 5 – Investment
  - Article 6 – Segregation and Merging
  - Article 7 – Report

## Article 3: Bonus Determination

### Article 3.1: Grouping of Policies

- 3.1.1 An Appointed Actuary must consider the appropriate manner to group policies for the purpose of bonus determination. In general, policies may be grouped according to their major product features, e.g. policies with similar bonus structure, date of issue, policyholder age, and the extent to which guarantees are in or out of the money, and type of plan.
- 3.1.2 The grouping of policies should not materially disadvantage one group of policyholders at the expense of another group of policyholders and should have due consideration to the need to treat customers fairly. The product grouping should also be influenced by the risk sharing rules that the insurer has set out in its internal participating fund governance policy. For example, if the risk sharing rules dictate that the investment experience will be shared differently between single premium and regular premium products, the asset share will be determined separately for single and regular premium products.
- 3.1.3 Asset share, where calculated, should be determined separately for each product grouping.
- 3.1.4 The more homogeneous the product groupings are, the lesser is the extent of cross subsidies between policyholders. The Appointed Actuary should consider the need to ensure equitable treatment between classes of policyholders with the practical constraints of having too fine a grouping. The Appointed Actuary may also consider the consistency between the grouping of policies for the purpose of bonus determination and the Homogeneous Risk Grouping(s) (HRGs) used for the computation of C1 requirement under RBC2.
- 3.1.5 For each group of policies, the Appointed Actuary should consider the actual experience as well as the future bonus outlook so that this can be reflected in their pay-outs.
- 3.1.6 Old and/or small groups of policies may be grouped together with other policies judged to have similar characteristics in order that a practical and equitable approach to the sharing of experience could be achieved.

### Article 3.2: Asset Share

#### Uses of asset share

- 3.2.1 Asset share is commonly used in the following ways by actuaries to guide them in the bonus determination:

- setting the bonus scale such that the ratio of the asset share to the gross premium reserve lies within a certain specified range, at each product grouping level; or
- setting the bonus scale such that the ratio of the asset share to the surrender value or maturity value lies within a certain specified range, at each product grouping level; or
- similar derivations of the above methods. Please refer to Appendix 1 for an example.

## Calculation of asset share

3.2.2 Asset share for a product grouping at a given point in time is the accumulation of the premiums received plus investment income from the inception of the policies, less deductions due to benefit payments, commission, expenses, tax and transfers to shareholders.

Please refer to Appendix 2 for a sample asset share rolling calculation.

3.2.3 The asset share formula should also allow for survivorship with the relevant decrements such as mortality, morbidity and surrender. Surrenders may generate profits or losses that have an effect of increasing or reducing the assets backing the policies. An Appointed Actuary may adopt different approaches for the effect of surrender. The Appointed Actuary must satisfy himself or herself that the approach adopted is fair, appropriate and is consistent with the internal participating governance policy. A consistent method should also be adopted from year to year.

Where the impact of surrender is not taken explicitly into account, meaning that surrender is ignored as a decrement in the determination of the asset share, any profits generated from surrender of other policies within the same product group should ultimately be allocated back to the remaining policies within the same product group. This may be implemented by “grossing up” of the asset share.

3.2.4 An Appointed Actuary may roll forward the asset share at the beginning of the year to the end of the year using actual cash flows that were extracted from the insurer’s internal revenue accounts, or use any other equivalent methodology, to derive the asset share as at the end of the year. Examples of these include actual pay-outs of benefit payments and management expenses incurred for the year. The cash flows are then attributed either directly (for example, the actual benefits paid out for each product grouping) or by means of some drivers or proxies, to each product grouping. In the rolling forward of asset shares, the asset share at beginning of the year should be stable and not subject to re-determination. For practical reasons however, a re-computation of the beginning of year asset share would be allowed for example, due to updates to the data at the end of the previous year which was only known after the finalisation of the previous asset share calculations.

3.2.5 Wherever possible, an Appointed Actuary should make use of actual historical data such as historical investment yield and cash flows to derive the asset share. However, sometimes detailed historical records on actual experience may not be readily available (especially for policies which have been in-force for a very long time). In such cases, the Appointed Actuary may make use of proxies to the actual historical experience, such as best estimate assumptions, where it is reasonably prudent and equitable to do so.

3.2.6 It is important for an Appointed Actuary to continually look for ways to refine the way in which the asset share is being determined for each product grouping, to ensure equitability and fairness to policyholders and that the calculation method is robust. In particular, the asset share calculations should reflect any constraints imposed by the application of Matching Adjustment.

3.2.7 An Appointed Actuary may adopt different approaches in allowing for the cost of guarantees. For example, the Appointed Actuary may either make an explicit deduction for the cost of guarantees (subject to policy conditions and treating customers fairly) in the asset share formula, or allow for the cost of guarantee implicitly by declaring bonuses such that the ratio of the asset share to gross premium reserve is more than 100%, say 105%. In determining the approach to adopt, the Appointed Actuary should have regard to the reasonableness of the explicit deductions or target ratios, the impact on the policyholders of the product group over time, and the overall level of prudence.

3.2.8 The allowance for the cost of guarantees, be it implicit or explicit, arises from the view that it is prudent for the insurer to maintain some buffer to meet the cost of guarantees inherent in all its participating policies, taking into account the types of investment held, and that a charge should be imposed. An Appointed Actuary has to be careful that when introducing the cost of guarantees in the asset share formula through having some target ratios of asset share to gross premium reserve of more than 100%, that the insurer does not end up building up an estate which is not distributed to any class of policyholders.

3.2.9 An Appointed Actuary should be satisfied that the company has appropriate capability to compute the asset share for each product grouping. Any actuarial valuation software used should allow the company to update the asset share from

the previous period, based on the detailed cash flow projections of policies within the same product group over the year.

## Comparison of asset share with gross premium valuation

- 3.2.10 It was earlier mentioned that companies will typically compare the asset share with the gross premium reserve for each product grouping to decide how much bonus to set. For the purpose of this comparison, the 'grossed-up' asset share, as defined in the following paragraph, should be used.
- 3.2.11 The excess of the policy assets of the participating fund over the sum of the calculated asset shares for all product groupings (as described in the earlier section) should be fully allocated back to the respective asset share for each product grouping. This is to be done according to an objectively determined basis, such as the product grouping's share of the total policy liabilities or calculated asset share. This would give the 'grossed-up' asset share for each product grouping. If an Appointed Actuary is of the view that the calculated asset share of a particular product group is accurately tracked from inception, then discretion may be exercised not to allocate back any proportion of the excess to that particular product grouping. Similar to the rolling forward of asset shares as described in paragraph 3.2.4, the excess of policy assets over the calculated asset shares which had been allocated to a product grouping in previous years should not be reallocated to another product grouping.

## Article 3.3: Assumption Setting

- 3.3.1 An Appointed Actuary must refer to Section 5 of SAP L02 in setting the best estimate assumptions for bonus investigation.
- 3.3.2 In determining the best estimate projected fund earning rates or discount rates, an Appointed Actuary should also consider:
- the asset and liability duration, taking into account reinvestment risk where appropriate;
  - the current asset allocations and the strategic asset allocations;
  - the current observable market implied rate of returns and long-term best estimate rate of returns of the individual asset classes;
  - the likely future trends and how fast they would revert to the long-term best estimate rate of returns;
  - the consistency among these asset classes, including but not limited to credit spread and equity risk premium; and
  - the interactions of these asset classes and their impact over time.
- 3.3.3 For the purpose of the bonus investigation, an Appointed Actuary may consider using the best estimate assumptions without provision for adverse deviation to investigate the supportability of the bonus. However, the Appointed Actuary should ensure that the participating fund remains solvent under such bonuses, in accordance with MAS regulations.

## Article 3.4: Shareholders' transfer computation and tax

- 3.4.1 Shareholders' transfers are calculated as a certain percentage (such percentage being not more than 1/9th as currently stipulated under the Insurance Act) of the cost of bonus distribution to policyholders. Shareholders' transfers must be considered in the calculations of asset share and gross premium reserve.
- 3.4.2 For the purpose of asset share calculations, shareholders' transfers refer to the actual transfers to shareholders during the year. This can be attributed to the relevant product grouping to determine the asset share for each product grouping. In the absence of the historical information, this can also be worked out based on the Minimum Condition Liability basis as under the Singapore risk-based valuation and capital framework.
- 3.4.3 An Appointed Actuary must keep abreast of changes in tax rules and ensure that the assumptions used in both asset share and gross premium valuation calculations are consistent with the appropriate tax rules prevailing.

## Article 3.5: Operation of smoothing

- 3.5.1 Smoothing of total benefits over time is characteristic of participating funds, which may pool business both within and between generations and classes of policyholders.
- 3.5.2 An Appointed Actuary may exercise discretion, but any smoothing methods adopted should meet the following criteria:

- a genuine reduction in volatility of pay-outs;
- no significant increase in the risk of statutory insolvency;
- cost neutral, i.e. overpayments should balance underpayments in the long term;
- operate fairly for all policyholders.

## Article 3.6: Treatment of over or under-distribution

- 3.6.1 The bonus distribution should reflect the performance of the participating fund and ensure that the pay-outs on policies are fair.
- 3.6.2 An Appointed Actuary should seek to ensure that the insurance company which the Appointed Actuary is appointed by (the company) does not systematically over or under distribute bonus to policyholders in the long term.

## Article 3.7: Surrender values

- 3.7.1 In making the recommendation of bonus rates to the board of directors of the company (the Board), an Appointed Actuary should consider the impact of the bonus rates on surrenders. As well as bonus rates, consideration should also be given to any other factors (e.g. multiples of bonus rates or bonus rate factors which apply to surrenders) over which, under the policy terms and conditions, the company has discretion and which form part of the computation of the value which is paid to the policyholder upon surrender.
- 3.7.2 In making this consideration an Appointed Actuary should have regard to the progression of surrender values over the life of the policy. Consideration should be given to the consistency between surrender values and maturity values.
- 3.7.3 An Appointed Actuary should consider to what extent (if any) surrenders are being used to support the pay-outs to policyholders who hold their policies for longer. Where surrenders are being used to support pay-outs to policyholders who hold their policies for longer, the Appointed Actuary should consider if this is reasonable.
- 3.7.4 A summary of the considerations that an Appointed Actuary has made with regard to surrender value computation should be included in the Actuary's Report on bonus rates to the Board.

## Article 3.8: Treating customers fairly

- 3.8.1 Consideration of fairness to customers should include expectations that may have been formed by point of sale disclosures e.g. marketing literature, policy illustrations, post-sale disclosures, the company's past practice, as well as treatment by competitors or industry practices.
- 3.8.2 Consideration should also be given to the impact of writing new business on existing policyholders to ensure that they would not be unduly disadvantaged.

## Article 4: Fund Management

### Article 4.1: New business strain

- 4.1.1 Surpluses from the in-force products may be used to support new business strain. Alternatively, companies may choose to inject an amount equivalent to the estimated new business strain into the participating surplus account to support the strain.
- 4.1.2 Under both approaches mentioned above, an Appointed Actuary should ensure that the appropriate level of asset share for each product or product group is available for the bonus investigation and appropriately reflects the asset share of that product (or product group). This may result in negative asset share for products (or product groups) with new business strain in the initial years.
- 4.1.3 An Appointed Actuary must be satisfied that the resulting new business strain would not unduly impact the solvency of the participating fund or the company. If the Appointed Actuary has concerns that the level of new business strain is threatening the solvency position of the fund or company this must be raised with the Chief Executive and, if concerns remain, the Board.

### Article 4.2: Treatment of any non-participating business (including riders) written into the participating fund

- 4.2.1 Where such products are written in the participating fund the following conditions should apply:
- pricing should be fair and follow actuarial principles;
  - pricing of optional riders should be at least break even on a best estimate basis;
  - benefits (and losses) from any non-participating business (including riders) written into the participating fund should be treated consistently;
  - pricing of these products should not put undue strain on the participating fund;
  - the standards as prescribed in SAP L01 on approval of premium rates are to be consistently applied to these products.
- 4.2.2 Where such products are written in the participating fund, the Appointed Actuary should justify:
- why this is necessary instead of writing them under the non-participating fund;
  - how this decision is intended to benefit the participating policyholders;
  - under what conditions such products would be removed from the participating fund.
- An example of a rider that is appropriate to be written in the participating fund is on an accelerating critical illness product where the benefits from the rider are linked to the benefits of the basic participating policy.
- 4.2.3 The treatment of any non-participating business (including riders) written into the participating fund should be disclosed, where appropriate, to the policyholders and stated explicitly in the bonus report.

## Article 5: Investment

- 5.1 The financial condition of the participating fund depends fundamentally on the relationship between the assets and liabilities of the fund. The responsibility of an Appointed Actuary is to ensure that this relationship is effectively managed.
- 5.2 The ultimate responsibility for the investment policy lies with the Board. Under the Insurance (Actuaries) Regulations 2013, an Appointed Actuary must assist the company in formulating a suitable investment policy for the participating fund.
- 5.3 In providing advice to the management of the company and the Board, the Appointed Actuary should evaluate the appropriateness of the investment policy with regard to the nature and term of the liabilities as well as the investment environment.
- 5.4 In formulating the advice, the Appointed Actuary should take into account the following factors:
- available and authorized asset classes;
  - accounting and other reporting considerations;
  - degree of asset/liability mismatch and the associated hedging strategy (if any);
  - policy terms and conditions, including any embedded options or guarantees;
  - liquidity and credit quality of assets to meet policy claims, particularly in stressed scenarios;
  - credit or counterparty exposure risk;
  - company solvency and financial resources (capital); and
  - required returns and discretionary actions available to the company;
  - requirements for the assets needed to maintain or achieve Matching Adjustment status under RBC2, in particular for when the current assets are part of a Matching Adjustment or there is desire to create a Matching Adjustment portfolio; and
  - for assets which are used to support bonuses, any constraints imposed by the application of Matching Adjustment on the allocation of investment returns.
- 5.5 The Appointed Actuary should take into consideration the interests of policyholders and seek advice on any constraints or limits if necessary. Regular review of these limits is recommended, ensuring appropriateness in the level of risk taking against the solvency strength of the fund.
- 5.6 The Appointed Actuary should be satisfied that there are processes in place to ensure that appropriate systems of control, monitoring, approval and valuation of assets and liabilities have been established.

- 5.7 The Appointed Actuary should be satisfied that there are processes in place to ensure that the investment strategy is compliant with all relevant regulations, and consistent with disclosures made to policyholders.
- 5.8 Where investments are made in physical properties and specifically company occupied properties, the Appointed Actuary should be satisfied that such investments are made with sound investment evaluation and financial transactions such as leases are made on an arm's length basis.

## Article 6: Segregation and Merging

- 6.1 The participating fund may be segregated into sub funds ("segregation") formally (i.e. reported separately in the MAS forms) or notionally to manage different risks. For example, a reason for segregating the participating portfolio into sub funds would be differing investment strategies. Two or more sub funds may also be merged ("merger") for the purpose of risk pooling.
- 6.2 An Appointed Actuary should document the risks that are shared within the same participating fund or sub fund for experience pooling in the internal participating fund governance policy and the rules should be consistent from year to year and not subject to arbitrary changes. Any changes should be clearly justified and documented. The Appointed Actuary is also required to take into account the relevant requirements applicable to transfer of business under the Insurance Act.
- 6.3 If the participating funds are segregated, whether formally or notionally, there should be a clear allocation of expenses and investment income to each of the sub funds.
- 6.4 Prior to segregation or merger, an Appointed Actuary should consider:
- the existing internal participating fund governance policy;
  - the impact on bonus outlook for all affected policyholders;
  - the impact on solvency strength of the participating funds, including but not limited to the security of benefits for all affected policyholders; and
  - the impact on economies of scale.
- The Appointed Actuary should be satisfied that these factors remain reasonable and are not significantly weakened as a result of the segregation or merger.
- 6.5 The Appointed Actuary should be satisfied that the investment strategy remains suitable for all affected policies post segregation or merger.
- 6.6 The Appointed Actuary should be satisfied that the affected policyholders' interests are not compromised with the intended segregation or merger.
- 6.7 The Appointed Actuary should ensure that disclosure on the segregation or merger of the participating funds is done adequately to the prospective and existing participating policyholders.
- 6.8 Where there is significant weakening of these factors listed above or deviation from pre-segregation or merger investment strategy, an Appointed Actuary should inform the Board and document the reasons to proceed or not proceed with the segregation or merger.
- 6.9 The Appointed Actuary should be aware that the factors listed above are not exhaustive. If there are any other factors that will significantly impact the affected policyholders, the Appointed Actuary must inform the Board and document these factors.

## Article 7: Report

- 7.1 In his or her report on any aspect of the management of the participating fund of the company, the Appointed Actuary should comment on compliance with this SAP. Any deviations should be justified, and where appropriate, brought to the Board's attention.
- 7.2 Other than the requirements spelt out in Section 6.5 of SAP L01, the annual bonus investigation report should also cover:
- exceptional items and/or one-off events, including any changes in practice or approach against past practice;
  - consideration of the impact of bonus recommendations on policyholder benefits e.g. surrender values, and maturity values to groups of policyholders;

- specifics of calculations, including (but not limited to) asset share determination, charges for guarantees and/or smoothing, smoothing mechanism, expense allocations, allowances made for tax, shareholder transfers etc. should be disclosed;
- comments on the suitability and achievability of long-term investment return assumptions;
- considerations of the sustainability of proposed bonus rates, including impact on on-going solvency of the participating fund, and the fund's ability to meet its guarantees to policyholders should be included; and
- sensitivity testing results which assess areas of vulnerability of the par fund that may affect bonus recommendations, where the sensitivity testing should cover key risk factors that could affect sustainability of proposed bonus rates and the solvency strength of the par fund, such as changes in interest rates, equity and property values, as well as the discount rate of the gross premium reserve.

## Appendix Appendix 1

### Example where asset share may be indirectly used as a guide on bonus determination.

The accumulated asset shares of each product grouping is equated with the present value of expected future cash flows (assuming the proposed bonus rates) to obtain a rate of return to discount the future cash flows. This rate of return, which may be referred to as the Bonus Earning Power ("BEP") yield, is required to support future bonuses.

The BEP yield for each product grouping is then compared to their respective expected investment returns. If the BEP yield is lower than the expected investment return, this implies that the proposed bonus rates are sustainable. If the BEP yield is higher, this would mean that the proposed bonus rates are not sustainable.

## Appendix 2

### Sample asset share rolling calculation

Let:

AS[t] = asset share at time t

$i_t$  = actual investment return earned on the participating fund or sub-fund,  
where relevant, during year t

$$AS[\text{end of year}] = AS[\text{beginning of year}] * (1 + i_t) +$$

$$\{ \text{Premiums received during the year}$$

- Benefit payments paid during the year
- Commission paid during the year
- Expenses (incl. management expenses) incurred during the year
- Deduction for cost of guarantees\*
- Tax payable during the year
- Shareholders' transfers during the year } \* (1 + 0.5 \*  $i_t$ )

The above formula assumes that the cash flows happen in the middle of the year.

\*Subject to policy conditions and treating customers fairly.