

ACTUARIAL GUIDANCE NOTE**AGN 3 ADDITIONAL GUIDANCE FOR APPOINTED ACTUARIES**

This Professional Standard for the Hong Kong Appointed Actuary is issued by the Actuarial Society of Hong Kong. Its contents follow closely the Guidance Note issued by the Faculty and Institute of Actuaries to Appointed Actuaries who are directors or senior employees of long-term insurance companies in the U.K., i.e., GN8. The reason is that the legislation by which insurance companies are regulated in Hong Kong, the Insurance Companies Ordinance, closely parallels the corresponding legislation in the U.K., the Insurance Companies Act 1982, in the wide role that it leaves for the Appointed Actuary in the prudential supervision of the insurer which appoints him/her.

Application: Appointed Actuaries in Insurance Companies

Legislation or Authority

This Guidance Note deals with the determination of liabilities and solvency margins under the Insurance Companies (Determination of Long Term Liabilities) Regulation and the Insurance Companies (Margin of Solvency) Regulation. It has been written to help actuaries advising Hong Kong supervised long-term insurers.

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1. Introduction and Background

- 1.1 The primary references in this discussion paper are to the Insurance Company (Determination of Long Term Liabilities) Regulation (the Liability Regulations) and the Insurance Companies (Margin of Solvency) Regulation (the Solvency Regulations).

The Liability Regulations comprises regulations governing the valuation of long term liabilities of insurance companies for various statutory purposes under the Insurance Companies Ordinance (Cap 41) (the Ordinance). In particular these regulations govern the valuations of long-term liabilities for the purposes of an investigation to which Section 18 or Section 32 of the Ordinance applies. Such an investigation would normally be for determining:

- (a) whether the statutory certificate in respect of long-term business required under the Ordinance could be given,
- (b) the extent to which assets could be transferred out of the long term fund in accordance with Section 23(2) of the Ordinance,
- (c) whether a dividend may be declared by the company or a parent, having regard to Section 23(6) of the Ordinance.

These regulations are also relevant to the determination of the margins of solvency required by the Solvency Regulations.

- 1.2 Such valuations are the responsibility of the Appointed Actuary and this guidance, which is supplementary to that set out in Professional Standard PS1, has been prepared to draw the attention of Appointed Actuaries to certain aspects of their professional responsibilities relevant to these valuations.
- 1.3 The Solvency Regulations comprise regulations prescribing margins of solvency for the long term business of an insurance company. The amounts of mathematical reserves and of capital at risk to be used in the calculations required under these Regulations are required to be assessed by the Appointed Actuary.
- 1.4 It is the Appointed Actuary's professional duty to make timely written and reasoned disclosure, both to the company and to the Insurance Authority, if for some exceptional reason the Appointed Actuary is unable to comply fully with this guidance. In this event the statutory certificate must be qualified accordingly.

2. The Actuarial Valuation

- 2.1 Section 4(2) of the Liability Regulations is paramount. The Appointed Actuary should use prudent bases determined according to actuarial principles, and the professional considerations set out in PS1, particularly Section 6 thereof. The clause also refers explicitly to the need to have due regard to policyholders' reasonable expectations and to the inclusion of appropriate margins for adverse deviations of the relevant factors. This means that the valuation basis used should include appropriate margins for adverse deviations of each of the relevant factors having regard to materiality. In deriving the valuation basis it is permissible to group policies by category of contract. The term 'category of contract' is used to mean contracts with similar types of benefit, including options and guarantees, that are considered to be sufficiently homogeneous by the Appointed Actuary. A valuation method which is not in general use in the profession (whether to value a normal type of contract or in other circumstances) is not precluded, but an Appointed Actuary who uses such a method needs to be prepared to justify it by reference to actuarial principles. In relation to an insurance company, the Appointed Actuary should also bear in mind that any excess of assets over liabilities disclosed by the valuation can legally be transferred out of the long term fund, subject to satisfying, inter alia, the requirements of Section 23 of the ordinance.
- 2.2 Section 4(2) of the Liability Regulations also requires that the valuation liability must be determined in accordance with criteria which are set out in Sections 5 to 16 of the Liability Regulations. These criteria require professional interpretation in their application, and guidance on them is therefore given in Section 3 of these notes. However, they should not be regarded as necessarily satisfying the more general actuarial principle set out in Section 4(2) of the Liability Regulations. They are the basis of minimum statutory valuation, and the Appointed Actuary should carry out such investigations as considered necessary to be satisfied (and, where required, to satisfy the Insurance Authority) that the valuation satisfies the criteria. The criteria apply for each separate category of contract.
- 2.3 Section 4 of the Liability Regulations refers to the valuation having due regard to the reasonable expectations of policyholders. When carrying out the valuation in compliance with Sections 5 to 16 of the Liability Regulations, this should be interpreted as requiring the valuation basis to be sufficiently strong to enable an appropriate level of reversionary bonus or cash dividend to emerge (and similar bonuses which are added periodically over the term of the contract) but not as requiring implicit or explicit provision for any element of terminal bonus or any final payment of additional bonus where this is dependent on the market value of the assets at the time of payment. The Appointed Actuary would, however, be expected to make other investigations in order to be satisfied that the life fund is able to support a proper level of future terminal bonus having regard to the bonus smoothing policy followed by the company.
- 2.4 Section 4 of the Liability Regulations refers to the need to provide appropriate margins for adverse deviations of the relevant factors. The Appointed Actuary should consider the resilience of the valuation to changes in circumstances, with special reference to more extreme changes to which the office may be vulnerable, and provide appropriate margins in the valuation basis. The interpretation of prudence is

such that the Appointed Actuary needs to consider the likelihood of an adverse condition and any impact it may have on the liabilities. It is intended that the margin should cover the foreseeable future but care is needed to ensure that any margin is on the prudent side.

- 2.5 The Appointed Actuary should take account of any relationship which the company has with another company which is relevant for the purposes of the valuation. For example, where there are service agreements with other companies (whether or not within a group structure) the Appointed Actuary should consider whether any additional provision is appropriate for the contingency that such agreements might cease. This would be particularly relevant where a subsidised or beneficial agreement exists.

3. Section 5 to 16 of the Liability Regulations - The Minimum Criteria

3.1 General

3.1.1 As explained in paragraph 2.2, Sections 5 to 16 of the Liability Regulations set out minimum criteria against which the valuation basis of an insurance company should be determined for each separate category of contract. However, there are several respects in which these criteria are not precise and the Appointed Actuary has to interpret them in a prudent way, in regard to both the individual criteria and the criteria as a whole. If the Appointed Actuary considers that one of the required provisions or margins for any element of the basis is excessive, then it is not permissible, for this purpose, to offset part of it against another provision or margin required by the regulations except as set out in paragraph 3.8.1 and 3.10 below.

3.1.2 The Liability Regulations apply equally to both linked and non-linked business, except for Sections 14 and 15 which do not apply to linked business. For the purpose of this guidance note, a linked insurance contract may or may not provide discretionary dividends or bonuses during the life of the contract.

3.2 Section 5 of the Liability Regulations

3.2.1 Section 5 states that liabilities under with-profits policies shall recognize the distribution of profits in an appropriate way over the duration of each policy and have regard to the custom and practice of the company in the manner and timing of the distribution of profits. The Appointed Actuary should ensure that the valuation basis for with-profits business is sufficiently strong to enable an appropriate level of reversionary bonus or cash dividend (or similar bonus which is added periodically over the term of the contract) to emerge in future years on the assumption of anticipated investment returns which themselves are reasonably prudent.

3.2.2 Section 5 also refers to the method of calculation and assumptions used in the valuation not being subject to discontinuities from year to year arising from arbitrary changes. This requirement shall not be interpreted to preclude changes to valuation interest rates which arise from changes in market yields,

or changes to valuation expense mortality or other assumptions which arise from changes in the company's actual or anticipated experience.

3.3 Section 6 of the Liability Regulations

Section 6 specifically refers to currency matching. The Appointed Actuary will have to consider the extent to which the liabilities are matched by currencies, and consider reasonable changes in exchange rates and their effect on the adequacy of the assets to meet the liabilities.

3.4 Section 7 of the Liability Regulations

3.4.1 Section 7 deals with avoidance of future valuation strain. The Appointed Actuary will have to consider the impact of any guaranteed surrender values which exist.

To assess the sufficiency of the amount of the liability determined at the current valuation for a given group of contracts for the avoidance of any future strain, the Appointed Actuary will have to consider whether the assets being accumulated in the future from :

- (a) the assets covering the amount of the liability determined at the current valuation; plus
- (b) resources (including premium income allowing for the valuation rate of decrement, investment income at the valuation rate of interest, etc.) arising solely from that group of contracts; less
- (c) any payments of benefits, expenses, etc. as provided in the valuation,

be sufficient to meet the liabilities determined in the same manner as per the current valuation (including any provisions to be made pursuant to Section 10(2) of the Liability Regulations at the relevant future valuation) at all times in the future.

3.4.2 The appointed Actuary is advised to perform cash flow projections under different scenarios to determine whether additional reserves have to be held. The cash flow projections should take into account the premium and benefit payment patterns, mortality rates, lapse rates, the rate of asset appreciation/depreciation, expenses , partial withdrawal and any embedded options.

For investment-linked business, the Appointed Actuary has to consider the following factors in performing the cash flow projections:

- a) the effect when an investment-linked policy ceases premium payment,
- b) whether the fee or charges are guaranteed or not,
- c) whether the allowance for fee or charges receivable in the future are sufficient to cover the assumed future expenses,
- d) whether the cost of insurance charges are guaranteed or not,

- e) whether the insurance charges are sufficient to cover the assumed future mortality and morbidity cost, and
 - f) whether the contract provides any bonus or options.
- 3.4.3 In the calculation of non-unit reserve, the Appointed Actuary must make prudent assumptions about future experience. There should be a consistent relationship between the gross unit growth rate, the rate of inflation of maintenance expenses and the discount rate. If it is the case that the use of a realistic discount rate together with consistent unit growth rate and maintenance expenses inflation rate would give rise to a higher level of reserve, then the Appointed Actuary should include an appropriate allowance for the additional liability, i.e., the assumptions should be prudent when taken together. Any excess of assumed gross unit growth rate over the assumed rate of expenses inflation should be assessed prudently, in the light of the valuation assumptions, market conditions and future expectations over the remaining term of the relevant contracts.
- 3.4.4 Where the company has discretion to increase charges for investment-linked contracts, the Appointed Actuary may take this into account when calculating the non-unit reserves, but only to the extent that the assumed future increases in charges are consistent with the reasonable expectations of policyholders in the context of the assumptions made for valuation. In making the calculation, the Appointed Actuary should allow for any delay before increases could be implemented, and for any administration costs associated with such increases.
- 3.4.5 In calculating the non-unit reserves for investment-linked business, the Appointed Actuary should allow for the impact on future management charges of an immediate change in asset value.
- 3.4.6 For regular premium investment-linked policies, the Appointed Actuary should consider and make prudent allowance for the effect on non-unit reserve calculated on an ongoing premium payment basis if conversion to paid-up policy status were to be assumed. To carry out calculations at every future duration in order to determine the reserve required if conversions to paid-up policy occurs may be inappropriately onerous. It is acceptable to assess any additional reserves based on specimen calculation, provided that the Appointed Actuary is satisfied that the overall non-unit reserves are prudent.
- 3.4.7 Where the contract provides a loyalty bonus, the Appointed Actuary should hold a provision for the accrued bonus so to avoid the strain in the year it is paid.

3.5 Section 8 of the Liability Regulations

- 3.5.1 Section 8(5)(a) requires an adjustment (where relevant) to the yield on assets other than equity shares or land to recognize the possibility of default. This is in addition to the 2.5% margin required by Section 8(2). This regulation refers to the need to have regard to the yields available on risk-free investments of a similar term in the same currency when assessing this adjustment. It is appropriate to have regard to any differences in yield which arise from

differences in marketability of the asset in question as compared with the risk-free alternative when assessing the deduction for the default risk.

- 3.5.2 Section 8(5)(b) requires an adjustment (where relevant) to the yield on equity shares and land to recognize the possibility of a future reduction in aggregate yield on each category of asset. When assessing this adjustment, it is appropriate to allow for market knowledge, degree of marketability and, for land, the covenant of the tenant.
- 3.5.3 Section 8(7) requires the prudent assessment of the yield of a long term fixed interest security issued by the national government of the country in which currency the liabilities are denominated. If there is no long term security available it is reasonable for the Appointed Actuary to examine other securities both in the same currency and different currencies with due regard to any currency risk to determine an appropriate yield
- 3.5.4 Section 8(9) allows assets to be notionally apportioned, where appropriate, between different categories of contracts for the purpose of determining the rates of interest to be used in valuing a particular category of contract. Any such apportionment shall have regard to the prudence concept. It would not, for example, be prudent to allocate overseas branch assets to cover Hong Kong policyholders' liabilities where, in practice, local regulations in the territory concerned made such an allocation impractical to achieve. Where derivative contracts are held in connection with particular assets or liabilities in the long-term fund, then it will generally be appropriate to apportion these derivatives together with the corresponding assets and liabilities.

3.6 Section 10 of the Liability Regulations

- 3.6.1 Section 10 (1)(a) refers to the need to cover any increase in liabilities caused by the policyholders exercising options under their contracts. The Appointed Actuary needs to consider the effect of options available to policyholders on reserve. This is particularly important for investment-linked business where optional benefits are common features. Section 10 (1)(b) refers to the need to cover any increase in liabilities caused by the operation of any guarantee included in the product. The Appointed Actuary will have to examine the impact of any guaranteed surrender values on this. This will have to be considered in conjunction with 3.4, the avoidance of future valuation strain.
- 3.6.2 Where an optional benefit is of greater value than the basic benefit under the valuation assumptions, then a prudent allowance should be made in the valuation for the proportion of policyholders likely to exercise the options. Where the optional benefit is likely to be the most attractive alternative to the policyholder and the most costly option to the company, then it will normally be appropriate to assume that all policyholders exercise the option. However, where there are advantages to policyholders in not exercising the option, then it may be appropriate to make allowance for a proportion failing to exercise the option. In making such an allowance, past experience may only be taken into account to the extent that it is deemed likely to remain relevant under the

other valuation assumptions. In addition, any such allowance must be sufficiently prudent to allow for possible future changes in circumstances.

3.6.3 Where a contract permits partial withdrawals, the Appointed Actuary should take into account the effect of these. Allowances should be made for all contracts where withdrawals are currently taking place and an allowance should be made for contracts, where withdrawals may reasonably be expected to arise in future. In assessing the allowance to be made, the Appointed Actuary should use assumptions that are prudent with appropriate margins for adverse deviations. In particular, the possibility of anti-selective behavior by policyholders should be considered and if necessary allowed for.

3.6.4 The provisions for options, including an option to surrender a policy immediately in return for a non-guaranteed surrender value, should at all times sufficient on the valuation assumptions to meet payments as they fall due, i.e., that there be no future valuation strain. In assessing the level of surrender value that might be payable in the future on the valuation assumptions, future rates of reversionary bonus should be assumed consistent with the reasonable expectations of policyholders in the event that experience were to follow the valuation basis. In the circumstances that the rates of bonus that would be likely to be declared in the short term exceed those supported by the investment returns assumed in the valuation, account may be taken of the effect of any market value adjustment that would be consistent with the reasonable expectations of policyholders in these circumstances.

3.7 Section 11 of the Liability Regulations

Section 11 requires prudent rates of mortality and disability. Account should be taken of relevant trends in experience within the company or the industry, including appropriate allowance for future improvements in mortality for contracts where the assumption of lighter mortality increases the required reserve. For assurance and sickness business allowance should be made for the incidence of mortality and morbidity arising from known diseases or improvements in medical science whose impact may not yet be reflected fully in current mortality or morbidity experience.

For investment-linked business, The Appointed Actuary has to consider whether the insurance charges receivable in the future are sufficient to cover the future mortality and morbidity cost.

3.8 Section 12 of the Liability Regulations

3.8.1 Section 12 clearly requires the Appointed Actuary to make provision for the future increases considered likely in expenses for existing business, based, inter alia, on prudent assumptions as to the future rates of increase in prices and earnings. In considering such provision, it would be reasonable for the Appointed Actuary to take into account margins arising from, and restrictions on, interest rate assumptions e.g. increases in income from existing holdings of index linked stocks, equities or property or the restriction on income created by the limitations of Section 8(7) and 8(8).

- 3.8.2 In requiring provision to be made for meeting the expenses likely to be incurred in future in fulfilling the existing contracts, it is permissible to take credit to the extent appropriate for the difference between the gross premium and the valuation net premium. Explicit allowance for future expenses will be required for all contracts under which no future premiums are receivable where these are not provided by disclosed margins in the valuation rate of interest.
- 3.8.3 Whether or not the Appointed Actuary performs the valuation under Section 4 on the assumption that the office will continue to transact new business. Section 12(1) requires an assessment of the provision for future expenses against the total (net of tax) cost that would be likely to be incurred in fulfilling existing contracts if the company were to cease to transact new business twelve months after the valuation date. Experience has shown that the transition to a closed fund is likely to be costly and that more than twelve months may elapse from such closure before the lower level of expense appropriate to a closed fund is achieved. In addition, the future tax position of the fund may be affected.
- 3.8.4 Section 12(1) should be interpreted to mean that the Appointed Actuary should provide for any expense overrun in respect of new business for the following year. The Appointed Actuary should make a prudent assessment of such expense overrun having regard to the amount of new business likely to be written and the level of acquisition expenses that will be incurred.
- 3.8.5 In general, no explicit provision would need to be established in respect of an acquisition expense overrun if:
- (i) the new business is expected, on a prudent basis, to be self supporting after allowing for the repayment of any valuation strain (together with an appropriate rate of interest); or
 - (ii) any valuation strain associated with the new business to be issued in the forthcoming twelve months is less than the surplus expected to arise during that period from existing business, using prudent estimates for all relevant assumptions.

Where neither of the above two conditions is met, then an additional provision equal to the lesser of the shortfalls arising, after discounting to the valuation date, would be required. For the purpose of calculating mathematical reserves and estimating the cash flow arising from existing business, the estimated expenses in the year following the valuation date should reflect a going concern basis.

3.9 Section 15 of the Liability Regulations

Section 15 deals with Acquisition Expenses and it should be noted that the maximum allowance for expenses is different for business carried out in or from Hong Kong than for other business.

3.10 Section 16 of the Liability Regulations

- 3.10.1 Professional judgment is particularly necessary in applying the requirement in Section 16 which applies to the aggregate liability, that the determination of the amount of long term liabilities shall include prudent provision against the effects of possible future changes in the value of the assets on their adequacy to meet the liabilities. Section 16(a) requires Appointed Actuaries to consider mismatching provisions from the view point of emerging cash flows whilst Section 16(b) requires a test of the resilience of the overall reserves to satisfy Sections 5 to 15 in changed investment conditions. The overall provision established should be the greater of the amounts required under these two calculations. Paragraphs 6.7 to 6.10 of PS 1 set out considerations to be taken into account, as does paragraph 2.4 above.
- 3.10.2 Section 16 gives no indication of the range of possible future changes in the value of the assets which is to be allowed for. In determining an appropriate range, the Appointed Actuary must use professional judgment as an experienced financial practitioner. The essential point is that if changes, for example in market yield or currency values, would result in a change in the aggregate liability that is not matched by a change in the market value of the corresponding assets, then Section 16 requires the Appointed Actuary to consider what provision is required as a contingency margin, having regard to the consequences should the provision prove to be insufficient. In particular the Appointed Actuary needs to exercise special care with regard to any investments presenting novel or unorthodox features, derivatives (whether assets or liabilities) and any contracts containing substantial options.
- 3.10.3 To calculate any provision required under Section 16(a) the Appointed Actuary should look at cash flows emerging from assets and in force policies and where the incidence of these is not identical make a reasonable but prudent assumption that investment markets move against the company. In performing this calculation the Appointed Actuary should comply with the valuation principles set out in Section 4 (excluding the reference to Section 5 to 15) and have regard to the reinvestment restrictions set out in Sections 8(7), (8) and (9).
- 3.10.4 As referred to the 3.5.3 above, Section 8(9) allows a notional apportionment of assets for the purposes of determining the rates of interest to be used when valuing a particular category of contract. Section 16 can, if desired, be applied separately to each differentiated category having regard to the assets notionally apportioned to it. Any assets which are entirely free after such an apportionment do not have to be brought into account in determining the matching position. Furthermore, when applying the valuation regulations to the changed investment conditions postulated, it is appropriate to allow for the revised yields on the relevant assets at their new value and to review any margins in the valuation basis that are not strictly required by the regulations. (i.e. that any excessive margins or provisions can be reduced or removed.) For with-profits business, however, Appointed Actuaries must ensure that the liability in the changed investment conditions adequately covers policyholders'

(revised) reasonable expectations and (more generally) that the valuation basis satisfies Section 4 (excluding the reference to Section 16.)

4. Solvency Margins etc.

- 4.1 Although it is not a requirement of the Solvency Regulations, the Appointed Actuary will need to advise the company as to the action required
- (i) to maintain the margins of solvency as prescribed by the Solvency Regulations as the existing business becomes more mature, or
 - (ii) in view of the requirement under Section 18 of the Insurance Companies Ordinance for the Appointed Actuary to continue to give statutory certificates, to protect its position in certain circumstances such as those referred to in paragraphs 5.5 to 6.11 of PS1, if in the Appointed Actuary's opinion there are reasonably foreseeable circumstances in which the office would be unable to meet its obligations.
- 4.2 The prudent assumptions on which the reserve under the regulations must be calculated will naturally allow for stochastic variations as well as other contingencies. In determining the extent to which the Appointed Actuary would consider it prudent to make provision for the more extreme stochastic variations in valuing particular categories of contract (for example, in relation to mortality and morbidity fluctuations, and variations in benefits resulting from the inclusion in a unit-linked contract of a maturity guarantee) the Appointed Actuary may reasonably take into account the basis of the solvency margin that the company is required to hold on account of the liabilities under those contract (net of the permitted deduction for reinsurance cessions).
- 4.3 In exercising professional judgment in the circumstances envisaged under paragraph 4.2 the Appointed Actuary will need to assess the security for the required margin of solvency for the long-term business as a whole, particular caution being required where it is in part covered by assets held outside the long-term fund. Furthermore, the Appointed Actuary will have to certify that the resulting reserves, standing on their own, constitute a proper provision for the long-term liability on actuarial principles and reliance on the margin of solvency must not result in the margins in the valuation basis falling below the level where the Appointed Actuary can give this certificate.
- 4.4 Section 3(2) of the Solvency Regulations allows for the margins of solvency to be calculated on the basis of the minimum reserves as determined under the Ordinance. These reserves may be different to those reported to the Insurance Authority for solvency purposes.
- 4.5 For composite companies the regulations imply that the Appointed Actuary has to certify the solvency of the whole company. It will be necessary for the Appointed Actuary to ensure that the liabilities and solvency in respect of any other business is adequate before signing any certificate.

In so doing, it is reasonable for the Appointed Actuary to rely on the work of the appointed auditor and on the appointed auditor's report.

The Appointed Actuary of a composite company should, in any event, liaise closely with the appointed auditor in the preparation of the Appointed Actuary's certificate. Where such reliance has been placed on the appointed auditor, the third Schedule to the Ordinance allows for the certificate to be modified to reflect this.

***** END OF ACTUARIAL GUIDANCE NOTE *****