

ACTUARIAL GUIDANCE NOTE

SUPPLEMENT TO AGN 3 ADDITIONAL GUIDANCE FOR APPOINTED ACTUARIES

This document represents a supplementary Professional Standard for the Hong Kong Appointed Actuary issued by the Actuarial Society of Hong Kong. Its contents are to supplement the Actuarial Guidance Note number 3 (second issue) issued by the Actuarial Society of Hong Kong in June 2002. The effective date is 1 January 2013.

**Application: Appointed Actuaries in Insurance Companies
Sections 6 & 8 of Chapter 41E of the Insurance Companies Ordinance**

Introduction

This document is a work product of the Actuarial Society of Hong Kong ("ASHK") Chapter 41E Working Party and is in the form of common questions & responses, drafted with the following objectives:

- To enhance consistency across industry practice in respect of Chapter 41E of the Insurance Companies Ordinance
- To state where certain practices currently observed from the Appointed Actuary survey conducted by the ASHK in 2006 are not acceptable
- Not to challenge the authority of Chapter 41E or the Insurance Authority
- Not to contradict any applicable guidance notes or professional standards already adopted by the ASHK
- To be generally accepted by Appointed Actuaries practising in Hong Kong

This document covers Section 6, Currency Matching, and Section 8, Rates of Interest, of Chapter 41E.

In various places in this document examples are quoted. Users of this guidance should be aware that these examples are included for illustration purposes and do not represent any prescribed approach. Appointed Actuaries remain responsible for applying professional judgement in compliance with all relevant regulations and guidelines.

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SECTION 6: CURRENCY MATCHING

Where the liabilities of an insurer in any particular currency are not matched by assets expressed in or capable of being realized without any exchange risk into that currency, a prudent provision shall be included in the liabilities of the insurer against the effects of changes in exchange rates on the adequacy of the assets.

Q1. Does this apply to the policy reserve/liabilities only or policy reserve plus solvency margin?

This applies to liabilities only.

Q2. Does this apply to non-insurance liability (liabilities not related to policy reserves), for instance, amounts due to reinsurers?

Yes.

Q3. Should currency mismatch risk of stocks in multinational companies, or stocks that are listed in more than one country be considered?

For stocks, Section 6 and Section 16 of Chapter 41E should be considered together. The combined allowance in the reserve for the risk of movements in the value of stocks should consider both market risk and, where a stock has direct or indirect exposure to currencies other than that of the liabilities it is backing, exchange rate risk.

Q4. If the mismatch involves currencies that are pegged, then is it acceptable to say that no allowance need be made in the reserve?

No. Assuming that a peg will never move is not prudent, and it is thus imprudent to assume that zero allowance is required in the reserves in the long run in respect of a mismatch between assets and liabilities of two currencies linked by a peg.

Q5. How should the prudent allowance in the reserve be calculated in respect of currency mismatches?

The reserve for liabilities which are backed by currency-mismatched assets should include a prudent provision to take account of the risk that the insurer is exposed to due to the mismatch. The provision should include an allowance for the potential adverse impact resulting from movement in the exchange rate of the respective currencies. This allowance would normally consider the expected average future cost of a matching currency swap (which inter alia should

include an allowance for the yield differential between the risk free yields for the respective currencies of a suitable term, consistent with the term of the liabilities being supported by those assets). An additional margin for prudence may, in the actuary's opinion, also be appropriate, depending on the nature of the mismatch.

As an example, for long term insurance liabilities, the differential could be determined by considering the cost of a 20 year currency swap - or where such a swap did not exist or was not liquid, by considering the differential between 20 year government bond yields of the respective currencies. Where government bond durations in one of the currencies is limited, it would be appropriate to compare yields at shorter durations where bonds are liquid. It is appropriate for the currency mismatch to impact reserves to the extent this is generated by changes in portfolio duration, credit quality, liquidity or other factors not related to the currency risk. Questions 21 to 23 include comments on considerations related to credit quality.

Q6. What if the mismatched assets are covered by currency derivatives?

In setting the valuation interest rate, the maximum valuation interest prescribed by Section 8 of Chapter 41E needs to be considered. Within Section 8, the yield on existing assets should take account of currency derivatives, usually by considering the derivatives in combination with the assets they are covering.

If the term of the derivatives is shorter than the term of the assets they are covering, then the stipulations under Q5 above apply for the period after the derivatives have run off.

SECTION 8: RATES OF INTEREST

General questions

Q1. How does Section 8 apply to Unit Linked products?

Section 8 does not apply to the unit growth rate used in the calculation of any reserves. However, a prudent growth rate should be used, where prudent could mean either a high rate or a low rate.

It does apply to the determination of non-unit reserves for unit linked products.

Non-unit reserves for unit linked products are defined as the policy liabilities set for the policyholder benefits which are not fully matched by the assets in the separate accounts. These include, for example, extra death benefits on top of the fund value, guarantees and loyalty bonuses that are backed by the assets in the company's general account. In calculating these non-unit reserves, a prudent discount rate determined in accordance with Section 8 should be used.

Subsection (1) - The rates of interest to be used in calculating the present value of future payments by or to an insurer shall be no greater than the rates of interest determined from a prudent assessment of the yields on existing assets attributed to the long term business and, to the extent appropriate, the yields which it is expected will be obtained on sums to be invested in the future.

Q2. “No greater than”’: does this mean that this section only prescribes the maximum rate, and that the actual applied rate can be lower than this maximum rate?

Yes.

Q3. Does “existing assets” mean the actual asset holding as of the valuation date? Can a holding just before the valuation date or expected to be held shortly after the valuation date be used?

“Existing assets” means the actual holding at the valuation date. For example, if all assets are in cash at the valuation date then the cash yield should be used, even if the large cash holding were seen as only temporary. In a situation where the valuation date fell during a large asset repositioning exercise i.e. large purchases and sales were being undertaken but were not yet complete on the valuation date, it may be appropriate for the Actuary to reflect the post repositioning asset holdings to the extent these were implemented subsequent to the valuation date. This should not be interpreted to mean it is appropriate to reflect potential future asset mix changes in the current valuation.

Subsection (2) - For the purposes of subsection (1), the assumed yield on an asset attributed to the long term business, before any adjustment to take account of the effect of taxation, shall not exceed the yield on that asset calculated in accordance with subsections (3), (4) and (5), reduced by 2.5% of that yield.

Q4. Does the "97.5%" only apply to yield on existing assets or also to the future new money yield?

It applies only to the yield on existing assets. It does not apply to the future new money yield.

Q5. What does “before any adjustment to take account of the effect of taxation” mean? Does it mean that the yield should be gross of tax, for example even in respect of withholding tax which applies to income received from bonds denominated in Thai Baht or Indonesian Rupiah?

This part of the regulations is interpreted to mean that “circular references” on tax should be avoided. An example is that if tax is paid on profits then an additional reserve will reduce the tax payable, hence tax on profits should not be allowed for in the reserve if this would increase the reserve and lead to lower tax, i.e. the yield on assets applied to determine the maximum valuation rate of interest should be gross of such tax.

However, in any case, the rates of interest assumed must allow appropriately for the rates of tax that apply to the investment return on policyholder assets.

In the case of withholding tax on income received from bonds denominated in Thai Baht or Indonesian Rupiah, for example, the yields should be reduced for the impact of such withholding tax.

Q6. Should the asset yields in this regulation be those before or after consideration of investment expenses?

Asset yields should be net of investment expenses. This is consistent with the requirement to use a “prudent assessment” of the yields.

Q7. Is 97.5% enough to deal with “prudence”?

The use of the 97.5% factor provides some level of prudence to the underlying assumptions, but is not de facto sufficient to provide prudence by itself i.e. the Actuary must consider other assumptions and the overall reserve level.

Subsection (3) - For the purposes of calculating the yield on an asset, the asset shall be valued in accordance with section 8(4) of the Ordinance.

Q8. Is there a concept of “admissible assets”?

Chapter 41 (Insurance Companies Ordinance) and Chapter 32 (Companies Ordinance) do not clearly state what assets are considered to be admissible in covering the liabilities. It is noted that Chapter 41G of the Ordinance contains regulations on the valuation of assets, but it applies only to general insurance business, and not to life business.

The Insurance Authority (“IA”) adopts a prudent approach in determining the values of assets and liabilities and does not normally treat intangible assets such as goodwill, deferred profits etc. as admissible assets for the purposes of solvency assessment under the Insurance Companies Ordinance (“ICO”).

The IA has wide-ranging powers of intervention under sections 27, 28 and 29 of the ICO and the IA’s powers in relation to investments is prescribed under Section 28 of the ICO.

There are several sections of Section 28 of Chapter 41 of the ICO, *Requirements about investments*, which have general relevance, however:

The Insurance Authority may require an insurer –

- *not to make investments of a specified class or description;*
- *to realize, before the expiration of a specified period (or such longer period as the Insurance Authority may allow), the whole or a specified proportion of investments of a specified class or description held by the insurer when the requirement is imposed.*

A requirement under this section may be framed so as to apply only to investments which are (or, if made, would be) assets representing a fund maintained by the insurer in respect of its long term business or so as to apply only to other investments.

Q9. So what asset values should be used as reference values in this regulation?

Other than as set out in the responses to the above questions, there is no explicit reference within the ICO of how assets should be valued for life insurance business. However, it should be noted that, under Section 4 of the regulations, the amount of liabilities of an insurer in respect of long term business shall be determined in accordance with generally accepted accounting concepts, bases and policies or other generally accepted methods appropriate for insurers.

The asset values on the statutory balance sheet are therefore used as reference values in this regulation, and reference should be made to the applicable asset valuation regulations (e.g. Hong Kong GAAP).

Q10. Are there any complications if assets on the balance sheet are classified as "Available for Sale"?

Under certain asset valuation regulations which might be used for statutory reporting in Hong Kong, it is possible to classify assets as Available for Sale ("AFS"). In brief, the characteristics of such assets are that:

- The assets are held at market value on the balance sheet.
- However, only realised gains on these assets pass through the revenue account. Unrealised gains do not pass through the revenue account, but pass directly into shareholder equity. The shareholder equity therefore contains the value of the unrealised gains on AFS assets.
- The revenue account therefore reflects gains in the same way as if the asset had been held on the balance sheet at book value, i.e. the reported profit reflects investment return on a book yield basis.

In the context of the regulation on the maximum valuation rate of interest, a question arises as to whether the reference point for the asset valuation should be the balance sheet value, i.e. the market value, or the value consistent with the way gains are recognized in the revenue account, i.e. the book value.

The use of the word "valued" in the regulation ("*...the asset shall be valued in accordance with...*") suggests that the balance sheet value, i.e. the market value, should be used as the reference point for AFS assets. This is also consistent with the use of statutory accounts as a primary measurement of solvency, which is a balance sheet concept.

Subsection (4) The yield on an asset, subject to subsection (5), shall be...

Q11. Which assets belong to each of the categories (a), (b) and (c) under subsection (4)?

Please refer to the following table with the list of assets based on Paragraph 16 of Schedule 3 of Chapter 41 (Insurance Companies Ordinance), and their respective suggested categorisation:

Suggested Classification of Asset per Cap 41E, Section 8 (4)

KEY:

a	Subsection 4(a) – in the case of fixed interest investments (that is to say, investments which are fixed interest securities),
b	Subsection 4(b) – in the case of variable interest investments (that is to say, investments which are not fixed interest securities) that are equity shares or land,
c	Subsection 4(c) in the case of variable interest investments (that is to say, investments which are not fixed interest securities) other than equity shares or land,
b	(A) Land and buildings-
	Land held on a lease with an unexpired period of less than 10 years shall be separately identified. Where land and buildings have been valued in the year, the name or qualification of the valuer, and the basis of valuation must be disclosed. For assets valued previously, the year and amount of each valuation must be shown.
	(B) Fixed interest securities-
a	(i) issued by, or guaranteed by, any Government or public authority;
a	(ii) other fixed interest securities (except those in associated or subsidiary companies) distinguishing between listed and unlisted securities.
	(C) Variable interest securities-
c	(i) issued by, or guaranteed by, any Government or public authority;
c	(ii) others.
	(D) Other variable interest investments-
b	(i) equity shares (except those in associated or subsidiary companies) distinguishing between listed and unlisted shares;
Classify under "Look-through" instruments	(ii) holdings in unit trusts.
	(E) Investments in associated or subsidiary companies-
	(i) insurers-
b	(1) value of any shares held;
a	(2) debts (other than debts referred to in (g) below);
	(ii) non-insurers-
b	(1) value of any shares held;
a	(2) debts.
a	(F) Loans secured by contracts of insurance issued by the insurer.
	(G) Insurance debts (distinguishing between those due from associated or subsidiary companies and those due from others)-

a	(i) premium income in respect of direct insurance but not yet paid to the insurer less commission payable thereon;
a	(ii) amounts due under reinsurance contract, distinguishing as between reinsurance contracts accepted and reinsurance contracts ceded;
a	(iii) if material, recoveries due by way of salvage or from other insurers in respect of claims paid other than recoveries under reinsurance contracts ceded.
	(H) Debts not previously covered-
a	(i) fully secured;
a	(ii) partly secured;
a	(iii) unsecured.
	(I) Deposits and current accounts with banks-
a	(i) fixed term deposits;
a	(ii) current accounts.
	(J) Deposit and current accounts with deposit-taking companies registered or authorized by any government agency-
a	(i) fixed term;
a	(ii) at call.
a	(K) Cash.
Not applicable	(L) Computer equipment, office machinery, furniture, motor vehicles and other equipment.
Not applicable	(M) Goodwill, patents, and trademarks.
Apply judgement	(N) Other assets, to be separately specified if material.

Q12. In subsection (4), what happens if the assets are denominated in a different currency from the liabilities?

The yields should be those on the assets in question, initially regardless of the currency they are in. Allowance then needs to be made for expected average future movements in exchange rates, however, such that the final yield reflects the amount expected to be realisable in the currency of the liabilities. The impact of the expected average future cost of any currency swap also needs to be deducted.

Additional considerations in respect of currency mismatches are covered in Section 6 of Chapter 41E, Currency Mismatching.

Subsection (4) The yield on an asset, subject to subsection (5), shall be-

(a) - in the case of fixed interest investments (that is to say, investments which are fixed interest securities), that annual rate of interest which, if used to calculate the present value of future payments of interest before the deduction of tax and the present value of repayments of capital, would result in the sum of these amounts being equal to the value of the asset;

Q13. What does this mean in simple language?

For fixed-interest assets, such as bonds, this means the yield to maturity. If the asset is held at market value, the yield will be the market yield. If the asset is held at book value, the yield will be the book yield. Deductions will need to be made as necessary for direct tax (such as withholding tax on foreign bonds).

Subsection (4) The yield on an asset, subject to subsection (5), shall be-

(b) - in the case of variable interest investments (that is to say, investments which are not fixed interest securities) that are equity shares or land, the ratio to the value of the asset of the income before the deduction of tax which would most likely be expected to be received in the 12 months following the valuation date on the assumption that the asset will be held throughout that period;

Q14. For equities, what does the regulation mean in simple language?

For equities, the expected dividend yield should be used. The words "...on the assumption that the asset will be held throughout..." mean that it is *not* correct to include expected growth, i.e. a total return assumption cannot be used.

Q15. Is it acceptable to simply take last year's dividend yield, or the one currently listed in the newspaper?

The regulation refers to be an expectation for the 12 months following the valuation date, i.e. it is prospective. It is therefore potentially incorrect to take either last year's dividend yield or the one currently listed in the newspaper. Professional judgement of the appointed actuary should be used in determining the appropriate prospective rate.

Q16. What happens if the dividends in the next 12 months are expected to be unusually low compared to other years? Conversely, should special one-off dividends which are expected in the next 12 months be included?

While the regulation states that dividends expected in the next 12 months should be used, subsection (5)(b) also states that "*for assets which are equity shares or land, adjustments to yields shall be made as appropriate to exclude that part, if any, of the yield from each category of asset that is needed to compensate for the risk that the aggregate income from that category of*

asset, taking one year with another, might not be maintained". This is interpreted to mean that expectations of special one-off dividends expected in the next 12 months might need to be reduced if it is expected that these will not be maintained in periods after that.

Q17. Should the dividend yield be measured using the market value or the book value as the denominator?

The value shown on the balance sheet should be used as the denominator.

Q18. Does "land" include property (real estate)?

Yes.

Q19. What yield should be used on buildings for own use?

In a situation where the buildings are partially or fully utilized as "own use", it would be appropriate for the Actuary to impute rental income from the "own use" portion of the building. The amounts imputed should be consistent with market rates for space with similar characteristics and reflect any specific details around the "own use" occupation.

Subsection (4) The yield on an asset, subject to subsection (5), shall be-
(c) - in the case of variable interest investments (that is to say, investments which are not fixed interest securities) other than equity shares or land, that annual rate of interest which, if used to calculate the present value of future payments of interest, before deduction of tax, and the present value of repayments of capital, where applicable, would result in the sum of these amounts being equal to the value of the asset.

Q20. How should the yield for mutual funds and unit trusts be derived?

For these asset types, a "look-through" approach should be taken. As an example, the yield for an investment in a mutual fund will be equal to the weighted average yield of the underlying assets, less allocated charges levied by the mutual fund.

Subsection (5) In calculating the yield on an asset under this section-

(a) if the asset does not consist of equity shares or land-

(i) - a prudent adjustment shall be made to exclude that part of the yield estimated to represent compensation for the risk that the income from the asset might not be maintained or that capital repayments might not be received as they fall due; and

Q21. Does this simply mean that a reduction is taken for default risk, or also for other types of risks? Should an adjustment be made in respect of credit spread, for example?

There are various components to the total spread on corporate bonds compared to government bonds with the same features. These include security (i.e. default risk), marketability, liquidity, general levels of risk appetite among investors and any other special features (e.g. convertibility).

It is noted that, historically, the total spread for corporate bonds above government bonds has been much higher than the actual loss of yield from defaults. However, both Section 8 and AGN3 focus on default risk only. There is an implication that other differentials such as marketability and risk appetite of investors can remain unadjusted, although discretion is left to the actuary.

Q22. How should “prudent adjustment” for the risk be calculated and applied?

At a minimum, the asset yield should be reduced by the annualised expected default rate for assets of the same duration and grade/rating. Such default rates are published by ratings agencies such as Moody’s or Standard & Poors. It would be more prudent to take a multiple greater than 1 of the default rate to be subtracted in order to allow for an additional margin for prudence. The actual magnitude remains the judgement of the appointed actuary.

However, attention is drawn to Q23 below.

Subsection (5) In calculating the yield on an asset under this section-

(a) if the asset does not consist of equity shares or land-

(ii) - in making that adjustment, regard shall be had wherever possible to the yields on risk-free investments of a similar term in the same currency;

Q23. What does “regard shall be had” mean?

There is no specific guidance in Section 8 or in AGN3 as to how this should be interpreted. In its simplest form, it suggests that the overall allowable yield on corporate bonds, for example, should be judged with reference to risk-free investments of a similar term in the same currency. The adjustment should take account of the current difference between the yield on the relevant asset and comparable risk free investments. While the language is not clear, it would seem to suggest that it would be prudent to reduce the relevant asset yield by an appropriate amount to reflect the risk of not receiving the asset yield due to default of the underlying asset. As noted under question 22, this appropriate amount would seem to be at least the annualized expected default rate. It may also be appropriate for the Actuary to reduce the yield by an additional amount to reflect, specific circumstances on the valuation date.

This guidance sets out further notes regarding currency mismatching under Section 6.

Q24. What does "government bond yield" mean for Hong Kong Dollar?

The Hong Kong Monetary Authority ("HKMA") issues Exchange Fund Notes ("EFNs") which are HK\$ denominated fixed income debt instruments. These have in the past been the primary reference point for "risk-free investments" for Hong Kong Dollar denominated assets.

The issuance of EFNs started when the Financial Secretary announced in the 1993/94 Budget Speech that it was his intention to replace the Government Bond Programme with the EFN Programme. Currently Notes of 2/3/5/7/10 years to maturity are being issued at such times as HKMA may determine. At the discretion of the Financial Secretary, notes of other maturities and/or with a maturity shorter than 2 years may be offered from time to time.

Regarding the status to these bonds, EFN's constitute "direct, unsecured, unconditional and general obligations of the Hong Kong Government for the account of the Exchange Fund and will rank *pari passu* [which means *equally and without preference*] with all other unsecured indebtedness of the Hong Kong Government for the account of, and payable from, the Exchange Fund from time to time outstanding.

The HKMA may, however, also issue other HK\$ denominated fixed income debt instruments that are *not* payable from the Exchange Fund i.e. would be payable from other revenue sources. Such securities can also be considered as reference points for "risk free investments" for Hong Kong Dollar denominated assets.

Q25. There are also some "HKSAR government bonds" which are in existence, and the yields on them are different from those on EFNs. Can we use the yields on HKSAR bonds instead of those on EFNs?

As of October 2007, there were five "HKSAR government bonds" in issue, all of which were issued in 2004. The longest of these has a duration of over 10 years, which is a little longer than the longest duration EFN. These bonds were issued directly by the HKSAR government rather than via the Exchange Fund mechanism. Their details were:

- Maturity dates: 2008, 2009, 2014, 2014, 2019
- S&P Credit ratings: all are rated AA, except the 2008 bond which is not rated
- Size of issue (HK\$ billion): 2.7, 3.5, 1.25, 1.25, 1.5

In recent periods the yields on these bonds have been higher than on EFNs of a corresponding term. It is not known why the yields should be different, although it is assumed that liquidity plays a key role.

In general, it is felt that the yields on HKSAR bonds can be considered as risk-free for the purposes of this regulation. However, it worth highlighting that the relatively small amount of these bonds in circulation may mean that it is inappropriate for an actuary to apply their yields in setting valuation interest rate assumptions, and the actuary should not use these yields if their

appropriateness is doubtful.

Q26. This subsection refers to “risk-free investments”, whereas subsection 7(a)(i) refers to yields on “fixed interest securities issued by the national government”. Is there a reason for this difference?

It is notable that slightly different wording is used with this subsection using “yields on risk-free investments of a similar term in the same currency” and subsection 7(a)(i) of this section 8 refers instead to yields of “long term fixed interest securities issued by the national government of the country in which currency the liabilities are denominated.”

Subsection 7(a)(i) is more explicit, and it is clear that government bonds should be seen as the reference point for risk-free yields in that subsection.

For clarity, the term “national government” should be interpreted as the Hong Kong SAR government rather than that of the People’s Republic of China.

Subsection (5) In calculating the yield on an asset under this section-

(b) - for assets which are equity shares or land, adjustments to yields shall be made as appropriate to exclude that part, if any, of the yield from each category of asset that is needed to compensate for the risk that the aggregate income from that category of asset, taking one year with another, might not be maintained; for the purposes of this paragraph, a "category of asset" comprises assets of a similar nature, type and degree of risk.

Q27. In judging what adjustment is needed for risk, should assets be considered individually or in aggregate?

The use of the phrase “category of asset” in the regulations indicates that the adjustment should apply to whole categories of assets, rather than to each individual asset. For equities, for example, financial sector and raw material sector may be grouped differently or all equities may be considered in aggregate if the actuary has deemed appropriate.

Q28. How should the “adjustments to yields” to “compensate for the risk” be calculated and applied for equities or land?

Section 3.5.2 of AGN3 states that “it is appropriate to allow for market knowledge, degree of marketability and, for land, the covenant of the tenant”. The general approach should be to allow for a prudent additional margin in respect of the potential volatility of yields of equities or land.

The ordinance refers to “category of asset” and “aggregate income from that category”, so it is not necessary to consider each asset individually unless a single asset comprises a substantial proportion of a category or a material proportion of the total assets of the insurer.

For yields on office and retail property, additional considerations include the risk of future

decline in rental income. For individual properties, the risks are in general related to:

- the covenant of the tenant;
- duration to next rent review and potential for rental void or re-letting at lower rental;
- for industrial properties, the age of the building; and
- concentration of properties in a poorly performing geographical region or property sector.

Q29. With respect to the above question, what type of “market knowledge” is 3.5.2 of AGN3 referring to? Knowledge that a certain stock is high-risk? Is this consistent with efficient market hypothesis?

Section 8(5)(b) is concerned with categories of asset rather than individual assets, so AGN3 is not referring to knowledge of individual stocks. Relevant market knowledge to consider includes, but not limited to, the following:

- Analyst commentary on dividend outlook for sectors and countries.
- Knowledge of industry-wide and economy-wide factors (e.g. tariff review for utilities sector).
- Knowledge of market rentals and trends.
- Knowledge of rental and covenant trends in property sub-sectors and geographical regions.

Q30. The regulations only require the yield to be reduced to allow for the risk that income might fall. What about the risk that the capital value may fall?

The risk of asset values falling is covered Section 16 of Chapter 41E, *Nature and Term of Assets* (sometimes known as the “resilience test” section). No adjustment is required to the yield. However, we should understand if capital value fall is due to the expected future income drop. Then, adjustment to the yield to allow for the risk of income drop should be considered.

Q31. All of subsection 5 seems to be talking about making adjustments for risk. Doesn't modern economic theory suggest that we should simply discount using risk free rates?

The valuation regulations and the reserves generated by applying those regulations are not intended to be "market consistent" or to be those generated by applying “modern finance theory”. The reserves generated are required to be consistent with Insurance Companies Ordinance and changes in actuarial thinking as to the setting of prudent, appropriate, or economic reserves are ultimately not relevant.

Subsection 6 - To the extent that it is necessary to make an assumption about the yields which will be obtained on sums to be invested in future, the yield shall be determined in accordance with subsections (7) and (8).

{No questions on subsection 6}

Subsection (7) The yield assumed, before any adjustment to take account of the effect of taxation-

(a) on any investment to be made more than 3 years after the valuation date shall not exceed the lowest of-

Q32. What does “any investment to be made more than 3 years after the valuation date” mean?

This means investments into the future need to be considered. It includes the net of all policy and asset related cashflows.

Subsection (7) The yield assumed, before any adjustment to take account of the effect of taxation-

(a) on any investment to be made more than 3 years after the valuation date shall not exceed the lowest of-

(i) a prudent assessment of the yield, current on the valuation date, of long term fixed interest securities issued by the national government of the country in which currency the liabilities are denominated; or

Q33. What government bond type should be used if there is more than one source of bond yield?

For Hong Kong Dollar, two types of papers currently exist, being Exchange Fund Notes and HKSAR bonds. See question 27 for further discussion.

For other currencies, similar judgement should be applied, with the usual regard for prudence.

Q34. Can swap rates be used?

This section specifically refers to securities issued by national governments. Swaps are not issued by governments, and therefore should not be used.

Q35. Do the government bonds used need to be in the same currency as that of the liabilities? For example, for HK\$ liabilities, can US\$ bonds be used, given the peg?

The currency should be the same. Yields on bonds from a pegged currency should not be used. However, see question 37 for comments on proxy bonds.

In 2008 the Actuarial Society of Hong Kong issued specific guidance (the “2008 ASHK guidance”) on how to interpret this section which was subsequently confirmed by the Insurance Authority. The guidance confirms the requirement of the regulation for a prudent assessment of the yield on government bonds in the same currency as that of the liabilities. This would in normal circumstances be based on estimates derived from current market yields but may also

take account of recent trends in those yields. Question 37 also contains comments on proxy bonds which may also be relevant.

Q36. What duration should be used for “long term fixed interest securities”?

Maturity of less than 10 years would not normally be considered as “long term” in determining the maximum valuation interest rate.

In determining the actual duration to use, reference should be made to the duration (i.e. including both outstanding term and cashflow) of the liabilities. For a zero coupon payment 10-year liability portfolio, for example, the use of 10-year to 15-year government bond yields may be more appropriate than a 30-year government bond yields.

Q37. Can a proxy bond be created, with reference to actual bonds of a similar currency?

Yes. AGN3 states that proxy bonds can be hypothecated if real bonds of the same duration are not available. For example, a proxy 30-year Hong Kong Dollar EFN yield can be used which is derived from the yield on a 30-year US Dollar government bond adjusted by an appropriate prudent margin. The margin would make reference to margins between Hong Kong Dollar and US Dollar bonds at durations for which both types of bonds exist, less a margin for prudence.

Q38. How should the wording “a prudent assessment of the yield” be interpreted?

This wording effectively introduces some measure of strictness into the regulation wherever subjective judgement is applied. These include, for example:

- The duration for “long-term” should not be randomly picked to take advantage of the shape of the yield curve; it should be consistently chosen.
- Proxy bond yields should be derived using a consistent approach from one period to the next; the proxy yields should be derived using a prudent margin.

Q39. Do we have to use the yield on the valuation date?

In December 2008, the Actuarial Society of Hong Kong developed a sample approach and parameters on the determination of reinvestment yield for reserving under the 2008 ASHK guidance. The IA subsequently issued a circular letter to all Appointed Actuaries on 5 February 2009 drawing their attention to the statutory duties in relation to the adoption of such an approach and parameters. Appointed Actuaries should make reference to the 2008 ASHK guidance and the IA’s circular and any subsequent amendments in order to interpret that language appropriately.

Q40. Should the reinvestment rate always be equal to the government bond yield, even if the expected future asset mix will be in assets with lower yields?

The regulation sets out the maximum valuation yield, subject to the overriding principle of prudence. If for example a company had a stated policy of investing only in cash, it would be prudent to allow for a lower reinvestment rate than that derived by applying the maximum valuation interest rate regulations. The need for prudence is ultimately the overriding principle.

Subsection (7) The yield assumed, before any adjustment to take account of the effect of taxation-

(a) on any investment to be made more than 3 years after the valuation date shall not exceed the lowest of-

(i) a prudent assessment of the yield, current on the valuation date, of long term fixed interest securities issued by the national government of the country in which currency the liabilities are denominated; or

(ii) 6% per annum, increased by one quarter of the excess, if any, of the yield referred to in subparagraph (i) over 6% per annum; or

(iii) 7.5% per annum;

{No questions on parts (ii) and (iii)}

Subsection 7(b) - on any investment to be made at any time not more than 3 years after the valuation date shall not exceed the assumed yield determined under subsection (2) adjusted linearly over the said 3 years to the yield determined in accordance with paragraph (a).

{No questions on subsection 7(b)}

Subsection (8) - In no case shall a rate of interest determined for the purposes of subsection (1) exceed the adjusted overall yield on assets calculated as the weighted average of the reduced yields on the individual assets arrived at under subsection (2); and when that weighted average is calculated-

(a) the weight given to each investment shall be its value as an asset determined in accordance with section 8(4) of the Ordinance; and

(b) except in relation to the rate of interest used in valuing payments of property linked benefits, both the yield and the value of any linked assets shall be omitted from the calculation.

{No questions on subsection 8}

Subsection (9) - For the purpose of determining the rates of interest to be used in valuing a particular category of contracts the assets may, where appropriate, be notionally apportioned between different categories of contracts.

Q41. Can different blocks of business use different valuation interest rates?

Yes. This would be particularly appropriate if these different blocks of businesses are supported by different sub-portfolios of assets with very different yields, in particular.

Q42. Is “cherry-picking” allowed, say by allocating the highest-yielding equities to the

liabilities (and leaving the lower-yielding equities to cover the free assets) to boost the yield?

Yes, as long as the allocation of different asset types is carried out *consistently* from one year to the next and it complies with the principle of prudence. By *consistency* above it means applying a consistent philosophy / principal in allocating the assets (instead of mandating that the same asset item must go to the same cohort every year).

Appendix – General approach to determination of maximum valuation interest rates

The following sets out an example general approach that may be adopted by life insurers to determine the maximum allowable valuation rate in line with the regulations. This is not, however, the only approach that could be adopted while complying with the regulation and guidance and should not be interpreted in that way:

1. Classify the portfolio into different cohorts of using the same valuation interest rate. (For example, group the policies by currency or different product term etc).
2. Allocate the existing assets into each cohort and calculate the asset value of each cohort as shown on the balance sheet.
3. Calculate the Assumed Yield on Existing Asset, which is 97.5% of the aggregate yield adjusted for risk (default risk, the risk of future decline in rental income and etc) and direct tax.

The aggregate yield is the weighted average (by the value of asset held on the balance sheet.) of the asset yields as calculated in according to the categories set out below:

- a) Fixed interest investments:
 - i. If the asset is held at market value, the yield will be the market yield.
 - ii. If the asset is held at book value, the yield will be the book yield.
- b) Variable interest investments that are equity shares or land
 - i. For equities, the expected dividend yield (measuring the value held on the balance sheet) should be used.
 - ii. For land, “Imputed rental income and imputed rental expenses”.

- c) Variable interest investments other than equity shares or land

Annual rate of interest at which the present value of future interest payments and repayment of capital would result in the value of the assets held on the balance sheet.

For mutual funds and unit trusts type of assets, a “look-through” approach (Yield of the underlying asset as determined from (a), (b) and (c) above less charges levied by the mutual fund) should be taken.

4. Calculate the Yields on Future Investments:

- a) For investments to be made more than 3 years after the valuation date, the yield is the minimum of :
 - i. Government bond yield of the country in which currency the liabilities are denominated and consistent with the 2008 ASHK guidance The asset duration should take into account the duration of the liability and existing assets;
 - ii. $6\% + \frac{1}{4} * \max (4(ai)-6\%, 0\%)$; and
 - iii. 7.5%.
- b) For investments to be made not more than 3 years after the valuation date, the yield should be the interpolations of the yield calculated in (3) above to the yield determined in (4a) above.

5. The maximum valuation interest rate is a combined rate of (i) the Assumed Yield on the Existing Assets as determined in item (3) above and (ii) the Yields on Future Investments as determined in item (4) above.

In all cases, the maximum valuation interest rate should not be higher than the interest rate earned on the existing assets as set in item (3) above.

The method to combine the two rates should consider:

- a) the duration of existing liabilities and assets; and
- b) the future cash flows of liabilities and assets.

6. Repeat steps 3 to 5 to determine the maximum valuation interest rate of each cohort.