Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

Final

Standards of Practice – Practice-Specific Standards for Insurers Subsections 2320 and 2330 Life and Health Insurance

Committee on Life Insurance Financial Reporting

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Memorandum

To: All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries and Other Stakeholders

From: Tyrone G. Faulds, Chairperson
Committee on Life Insurance Financial Reporting

Geoffrey I. Guy, Chairperson
Actuarial Standards Board

Date: October 13, 2006

Subject: **Standards of Practice – Practice-Specific Standards for Insurers Subsections 2320 and 2330 Life and Health Insurance**

The Committee on Life Insurance Financial Reporting (CLIFR) proposed revisions to the current Standards of Practice – Practice-Specific Standards for Insurers Subsection 2330 (SOP) in a document released June 15, 2005. In response to the significant feedback received, CLIFR released proposed revisions to the current Standards of Practice – Practice-Specific Standards for Insurers Subsections 2320 and 2330 (SOP) in an exposure draft released June 28, 2006. A comment period on this exposure draft was provided up to July 31, 2006.

Comments received on the June 28, 2006 exposure draft have been taken into consideration. A number of the changes were made in these final standards to reflect the comments received that improve the Standards without significantly changing the content of the revisions that were proposed in the exposure draft.

In accordance with the Institute's policy for Due Process, the standard of practice has been approved by the Committee on Life Insurance Financial Reporting, and received approval from the Actuarial Standards Board on October 12, 2006 for distribution.

The effective date for this revision to the Standards of Practice is October 15, 2006. Early implementation is permitted.

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2320 METHOD

.01 *The actuary should calculate policy liabilities by the Canadian asset liability method.* 2130.37

.02 *The amount of policy liabilities by that method for a particular scenario is equal to the amount of supporting assets at the balance sheet date which are forecasted to reduce to zero at the last liability cash flow in that scenario.*

.03 *The term of the liabilities should take account of any renewal, or any adjustment equivalent to renewal, after the balance sheet date if* 2320.16

the insurer's discretion at that renewal or adjustment is contractually constrained, and

policy liabilities are larger as a result of taking account of that renewal or adjustment.

.04 *In forecasting the cash flow which the policy liabilities comprise, the actuary should* 2130.05

take account of policyholder reasonable expectations, and

include policyholder dividends, other than the related transfers to the shareholders account and other than ownership dividends, in the comprised cash flow from benefits.

.05 *The actuary should calculate policy liabilities for multiple scenarios and adopt a scenario whose policy liabilities make sufficient but not excessive provision for the insurer's obligations in respect of the relevant policies.* 1740.04

.06 *The assumptions for a particular scenario consist of*

scenario-tested assumptions, which should include no margin for adverse deviations, and

each other needed assumption, whose best estimate should be consistent with the scenario-tested assumptions and which should include margin for adverse deviations.

.07 *The scenario-tested assumptions should include at least the interest rate assumptions.*

.08 *The scenarios of interest rate assumptions should comprise*

a base scenario, as defined under paragraph 2330.091,

each of the prescribed scenarios in a deterministic application,

ranges which comprehend each of the prescribed scenarios in a stochastic application, and

other scenarios appropriate for the circumstances of the insurer. [Effective October 15, 2006]

Liability grouping and asset segmentation

.09 The actuary would usually apply the Canadian asset liability method to policies in groups which reflect the insurer's asset-liability management practice for allocation of assets to liabilities and investment strategy. That application is a convenience, however, which would not militate against calculation of policy liabilities that, in the aggregate, reflect the risks to which the insurer is exposed.

Other methods

.10 For a particular scenario, another method may be equivalent to or approximate the Canadian asset liability method. If the actuary uses that other method, then the calculation for multiple scenarios and the selection of one which makes sufficient but not excessive provision for the insurer's obligations would be the same as for the Canadian asset liability method.

Supporting assets

.11 In allocating assets to support liabilities, the actuary would preserve the connection between unamortized capital gains, both realized and unrealized, and the asset segments which generated them.

.12 The value of the assets which support policy liabilities at the balance sheet date would be their value in the insurer's financial statements; i.e., book value, taking account of accrued investment income and of adjustments for impairment, amortized unrealized capital gains, and amortized realized capital gains.

.13 The forecasted cash flow of the assets would take account of any related, off-balance sheet, financial instruments.

.14 The forecast of cash flow from taxes would take account of permanent and temporary differences between the amortization of capital gains in accordance with generally accepted accounting principles and in accordance with tax law.

.15 The assumed cash flow from policyholder dividends would avoid omission and double counting. For example, if the dividend scale includes distribution of a deferred realized capital gain (net of any corresponding future tax asset), then the assumed cash flow from policyholder dividends would exclude that distribution. In the opposite case, the assumed cash flow from policyholder dividends would provide for negative distribution of a deferred realized capital loss asset (net of any corresponding future tax liability). Such avoidance is appropriate only in the case of liabilities and would not be appropriate if the dividend scale included distribution of assets that support capital, or distribution of investment income on assets that support capital. 2320.35

Term of the liabilities

.16 If an element of a policy operates independently of the other elements, then it would be treated as a separate policy with its own term of liabilities. Examples are

> a flexible premium deferred annuity where the interest guarantee and cash value attached to each premium are independent of those for the other premiums, and
>
> a certificate of voluntary non-contributory association or creditor group insurance.

.17 The term of a policy's liabilities is not necessarily the same as the contractual term of the policy.

.18 In this context,

> "renewal" means the renewal of a policy at the end of its term, with the insurer having discretion to adjust premiums or coverage for the new term,
>
> "adjustment" means an insurer's adjustment to a policy's coverage or premiums equivalent to that in a renewal, and
>
> "constraint" means a constraint on the insurer's exercise of discretion in renewal or adjustment which results from contractual obligations, legally binding commitments, 2320.28
>
> and policyholder reasonable expectations. Examples of constraint are an obligation to renew a policy unless renewal is refused for all other policies in the same class, a guarantee of premiums, a guarantee of credited interest rate, a general account guarantee of segregated fund value, and a limitation on the amount of adjustment. "Constraint" would not include a price-competitive market expected at renewal or adjustment.

.19 The term of a policy's liabilities takes account of all renewals and adjustments before the balance sheet date. Depending on the circumstances, that term may also take account of one or more renewals or adjustments after the balance sheet date.

.20 If the term of the liabilities is not evident, and if selection of a longer term would reduce policy liabilities, then the actuary would be cautious in making such a selection. On the other hand, if selection of a longer term would increase those liabilities, then the actuary would usually select the longer term. Substance would supersede form in the selection; for example, a universal life policy which is in form an annual premium life insurance policy may be in substance a single premium deferred annuity.

.21 The term of the liabilities of

a policy which has been cancelled by the insurer ends at the effective date of cancellation.

a policy which has not been cancelled, but which is cancellable by the insurer at or before the date to which its premiums have been paid, ends at that date.

an individual annual premium life or accident and sickness insurance policy ends at the last day to which the policyholder may prolong its coverage without the consent of the insurer.

a certificate of group insurance if the group policy is in effect a collection of individual policies is the same as if it were an individual policy, unless contributions or experience rating of the group negate anti-selection by certificate holders.

.22 The term of the liabilities of any other policy ends at the earlier of

the first renewal or adjustment date at or after the balance sheet date at which there is no constraint, and

the renewal or adjustment date after the balance sheet date which maximizes the policy liabilities.

.23 The actuary would extend such term solely to permit recognition of cash flow to offset acquisition or similar expenses

whose recovery from cash flow that would otherwise be beyond such term was contemplated by the insurer in pricing the policy, and

where the value of the additional cash flow recognized by such extension of the term cannot exceed the value of the remaining balance of acquisition or similar expenses.

.24 The balance of acquisition or similar expenses would be written down to zero using an appropriate method. Such method would:

have a term consistent with the extended term established at inception,

have a write-down pattern reasonably matched with the net cash flow available to offset these expenses at inception, and

be locked in, so the amount of write-down in each period will not fluctuate from the expected amount established at inception provided such balance is recoverable from the additional cash flow recognized at the balance sheet date, and where not fully recoverable at the balance sheet date, is written down to the recoverable amount, with the expected amount of write-down in each future period proportionately reduced.

.25 That implies that the term ends at

the balance sheet date if the policy is continually renewable or adjustable without constraint,

the first renewal or adjustment after the balance sheet date if there is no constraint at that renewal or adjustment, and

a renewal or adjustment determined by testing for any other policy. The actuary would calculate the policy liabilities assuming that the term of its liabilities ends at each renewal or adjustment at or after the balance sheet date up to and including the first renewal or adjustment at which there is no constraint, and would select the term corresponding to the largest policy liabilities.

.26 A change in the outlook may provoke a change in the term of a policy's liabilities. For example, the constraint of a cost of insurance guarantee which previously lengthened the term of the policy's liabilities may no longer do so if the outlook for mortality improves. On the other hand, the constraint of a guaranteed credited interest rate which previously was considered innocuous may become meaningful, and thereby lengthen the term of the policy's liabilities, if the outlook changes to one of lower interest rates.

.27 For example, the term of the liabilities ends at

the balance sheet date for a daily interest rate deposit without minimum guarantee, an administrative services only (ASO) contract without expense guarantee, and the general account portion of a deferred annuity with segregated fund liabilities but without guarantees; for example, with no guarantee of the segregated fund value,

the first renewal of a single premium deferred annuity which is, in effect, a term deposit (i.e., having a credited interest rate guarantee for a stipulated period, say three years, beginning at the date of deposit, and no guarantee thereafter),

the first renewal (usually one year after the previous renewal) of a group policy which insures employee benefits, unless there is a constraint at that renewal, and

the next renewal date or adjustment date even if there is a constraint at renewals and adjustments at and after that date, but the constraint is so weak that its operation does not increase policy liabilities.

Policyholder reasonable expectations

.28 The insurer's policies define contractually its obligations to its policyholders. The contractual definition may leave certain matters to the insurer's discretion, such as

the determination of policyholder dividends, experience-rating refunds, and retrospective commission adjustments, and

the right to adjust premiums.

.29 Matters left to the insurer's discretion implicitly include

underwriting and claim practices, and

the right to waive contractual rights and to create extra-contractual obligations.

.30 Policyholder reasonable expectations are the expectations which

may be imputed to policyholders as their reasonable expectations of the insurer's exercise of discretion in those matters, and

arise from the insurer's communication in marketing and administration, from its past practice, from its current policy, and from general standards of market conduct. Past practice includes the non-exercise of discretion; for example, long non-exercise without affirmation of a right to adjust premiums may undermine it. The insurer's communication includes policyholder dividend and investment performance illustrations at sale of a policy and that of intermediaries reasonably perceived as acting in its behalf.

.31 In selecting assumptions for the insurer's exercise of discretion in those matters, the actuary would take policyholder reasonable expectations into account. Taking account of policyholder reasonable expectations may affect not only the amount of policy liabilities but also disclosure in the financial statements.

.32 The determination of policyholder reasonable expectations is straightforward when the insurer's practice has been clear, unvarying, consistent with its communications, consistent with general standards of market conduct, and the insurer does not intend to change it. The actuary would discuss any other practice with the insurer, with a view to clarifying policyholder reasonable expectations.

.33 If the insurer makes a change which will eventually alter policyholder reasonable expectations, then the actuary would consider both the appropriate disclosure of the change in policyholder communication and the financial statements, and the time elapsed before the altered expectations crystallize.

.34 A dispute over policyholder reasonable expectations may lead to class action or other litigation by policyholders against the insurer, which may affect policy liabilities or generate contingent liabilities.

Policyholder dividends

.35 The assumed cash flow from policyholder dividends would be that from both periodic (usually annual) dividends and terminal and other deferred dividends, but excluding that from the related transfers from the participating to the shareholders account in a stock insurer.

.36 The assumed cash flow from policyholder dividends would avoid omission and double counting with other elements of the policy liabilities and with liabilities other than policy liabilities. For example, if the actuary has valued the policy liabilities for riders and supplementary benefits in participating policies as though they were non-participating—i.e., with provision for adverse deviations in excess of that appropriate for participating insurance – then the assumed cash flow from policyholder dividends would exclude the portion of that excess which is included in the dividend scale.

.37 The selected policyholder dividend scales in a particular scenario would be consistent with the other elements of that scenario, but would take account of how insurer inertia, policyholder reasonable expectations, and market pressure may preclude the dividend scale from being responsive to changes assumed in the scenario. Those scales would also be consistent with the insurer's dividend policy except in a scenario which that policy does not contemplate and which would provoke a change in it.

.38 If the current dividend scale anticipates a future deterioration in experience, then the actuary would assume continuance of that scale in response to that deterioration. If the current dividend scale does not respond to a recent deterioration in experience but the insurer's policy is to do so, and if the delay in doing so does not provoke a contrary policyholder reasonable expectation, then the actuary would assume such response.

.39 An assumption of cash dividends to all policyholders is appropriate only if the alternative options to cash have equivalent value, failing which the actuary would

> either adjust the cash dividends to reflect the non-equivalence or make explicit assumption about policyholder exercise of the various dividend options, and
>
> provide for the anti-selection which will result from increasing exercise of the more valuable options.

Forecast of cash flow

.40 In calculating policy liabilities, the actuary would allocate assets to the liabilities at the balance sheet date, forecast their cash flow after that date, and, by trial and error, adjust the allocated assets so that they reduce to zero at the last cash flow.

.41 Use of the work of another person may be appropriate for forecasting the cash flow of certain assets, such as real estate. 1610

Income tax and alternative tax

.42 This item deals with cash flow from tax based on income (herein called "income tax") and other taxes not based on income but which interact with income tax; for example, certain capital taxes in Canada (herein called "alternative tax").

.43 The cash flow from such taxes would be limited to that in respect of the relevant policies and the assets which support their policy liabilities, and thus, with the exception of the recoverability of future tax losses described below would ignore any interaction between that cash flow and cash flow in the rest of the insurer; e.g., it would ignore tax on investment income from assets which support the insurer's capital. For a particular scenario, forecasted income before tax is equal to zero in each accounting period after the balance sheet date. That is so because that scenario assumes occurrence of the adverse deviations for which it makes provision. If income according to tax rules were equal to income in accordance with generally accepted accounting principles, and if there were no alternative tax, then the corresponding forecasted tax cash flow would also be equal to zero. In reality, however, such tax cash flow may differ from zero because of 2320.40

> differences—both temporary and permanent—between income in accordance with generally accepted accounting principles and in income in accordance with tax rules,
>
> the operation of carry-forward and carry-back in the tax rules, and
>
> alternative tax and the interaction between it and income tax.

.44 An example of a temporary difference is a difference between policy liabilities and the corresponding tax liabilities.

.45 An example of a permanent difference is a preferential tax rate on the investment income on a class of assets.

.46 The forecast of cash flow from such taxes would therefore take account of positive or negative tax as a result of permanent and temporary differences at, and arising after, the balance sheet date, and of alternative taxes incurred after the balance sheet date.

.47 The resulting policy liabilities make appropriate provision for cash flow on account of such taxes. If the insurer's balance sheet records a future tax asset or liability in respect of such taxes, then, in order to avoid double counting, the actuary would adjust the policy liabilities otherwise calculated upward to reflect the existence of the future tax asset and downward to reflect the existence of future tax liability.

.48 The realization of negative tax depends on the simultaneous availability of income which is otherwise taxable. In forecasting such income, the actuary would 2320.43

make provision for adverse deviations,

take into account the projected tax position of the company overall, but

not take account of the expected release of provisions for adverse deviations in the policy liabilities because, as noted above, their calculation implicitly assumes that those adverse deviations occur.

Adverse deviations borne by policyholders

.49 The policy liabilities need not make provision for adverse deviations to the extent that the insurer can offset its effect by adjustments to policyholder dividends, premium rates, and benefits. The insurer's contractual right of such offset may be constrained by policyholder reasonable expectations, competition, regulation, administrative delays, and the fear of adverse publicity or anti-selection. 1740.12 1740.24

Adoption of a scenario

.50 If the selection of scenarios is deterministic, then the actuary would adopt a scenario whose policy liabilities are within the upper part of the range of the policy liabilities for the selected scenarios, provided, however, that the policy liabilities would not be less than those in the prescribed scenario with the largest policy liabilities.

.51 If the selection of scenarios is stochastic, then the actuary would adopt a scenario whose policy liabilities are within the range defined by

the average of the policy liabilities which are above the 60^{th} percentile of the range of policy liabilities for the selected scenarios, and

the corresponding average for the 80^{th} percentile.

Scenario-tested assumptions

.52 The provision for adverse deviations in respect of scenario-tested assumptions results from calculating the policy liabilities for multiple scenarios and adopting a scenario whose policy liabilities are relatively high. 1740.21

Other assumptions

.53 The provision for adverse deviations in respect of each assumption other than the scenario-tested assumptions results from a margin for adverse deviations included in that assumption.

.54 The assumptions unique to a particular scenario are the scenario-tested assumptions and each other assumption which is correlated with them. For example, policyholder dividends and the exercise of options by borrowers and issuers are strongly correlated with interest rates. Lapses may be correlated or not, depending on the circumstances. The assumption on a matter not so correlated would be common to all scenarios. 1740.39

Margin for adverse deviations

.55 The margin for adverse deviations would be at least the average of the applicable high and low margin whenever at least one 'significant consideration' exists, or at least one other consideration is significant in the context of the valuation. Significant considerations vary by type of assumption and are described under subsections 2340 and 2350.

2330 SCENARIO ASSUMPTIONS: INTEREST RATES

General Considerations

.01 An interest rate scenario comprises, for each forecast period between the balance sheet date and the last cash flow,

an investment strategy, and

an interest rate for each risk-free asset and the corresponding premium for each asset subject to default.

.02 Each interest rate scenario would include an assumption with respect to the rate of inflation that is consistent with that scenario.

.03 The interest rate scenario would be consistent among the insurer's lines of business.

.04 The investment strategy defines reinvestment and disinvestment practice for each type, default risk classification, and term of the invested assets which support policy liabilities. Assumption of the insurer's current investment strategy implies investment decisions of reinvestment and disinvestment in accordance with that strategy and hence the risk inherent in that strategy.

.05 The investment strategy for each scenario would be consistent with the insurer's current investment policy. The policy liabilities would therefore make no provision for any increased risk which may result from a change in that policy.

.06 When using non-debt instruments, the actuary would ensure that the proportion of non-debt instruments, at each duration, would be in accordance with the insurer's current investment policy (regardless of whether net cash flows for the period are positive or negative). This review would be performed without taking into consideration any business that could be issued after the valuation date (new sales) even for a valuation done on a going concern basis as stipulated in paragraph 2130.02. In the case where the investment policy limits are set on a going concern basis, the actuary would be satisfied that the projected proportion of non-debt assets is appropriate to support only the in-force business at the valuation date, and does not explicitly or implicitly assume any future new business. This may create a situation where the actuary would have to assume that non-debt instruments would be divested. This disinvestment is not limited to non-debt instruments acquired after the valuation date.

.07 The number of assumed terms of assets would be large enough to permit assumption of changes in the shape and steepness of the yield curve. That implies a minimum of a short, a medium, and a long term.

.08 A scenario for a foreign country's interest rates would be formulated independently of that for Canadian interest rates unless their positive historical correlation is expected to continue.

.09 The importance of the assumptions for a particular forecast period depends on the magnitude of the net forecasted cash flow for that period.

Base Scenario

.09.1 The interest rates for investments purchased or sold are based on the following interest rate scenario using the insurer's current investment strategy:

> risk-free interest rates effective after the balance sheet date are equal to the forward interest rates implied by the equilibrium risk free market curve at that date, for the first 20 years after the balance sheet date;
>
> at or after the 40th anniversary from the balance sheet date, risk-free interest rates are equal to the sum of ½ of the 60 month and 120 month moving averages of historic long-term Canadian risk-free bond yields (V122544 term-to-maturity>10 years), annualized and rounded to the nearest 10 basis points;
>
> between the 20th and 40th anniversary, the forward risk-free interest rates are determined using a uniform transition; and
>
> the premiums for default risk at all durations, consistent with the current investment strategy and risk premiums available in the market at the balance sheet date.

.09.2 The provision for adverse deviations for interest rate risk for both deterministic and stochastic applications would be measured as the difference between the reported policy liabilities and the policy liability resulting from the application of the Base Scenario.

Prescribed scenarios

.10 Because future investment returns and inflation rates are so conjectural, it is desirable that the calculation of policy liabilities for all insurers take account of certain common assumptions. There are therefore nine prescribed scenarios which follow.

.11 The prescribed scenarios apply to debt investments acquired or sold after the balance sheet date.

.12 For a prescribed scenario, if the net cash flow forecast for a period is positive, then the actuary would assume its application to repay the outstanding balance, if any, of borrowing in accordance with paragraph 2330.14, and then

assume the reinvestment of any remainder in debt investments,

except that, in lieu of debt investments, the actuary may assume reinvestment in non-debt investments

not to exceed their proportion of investments at the balance sheet date if the insurer controls investment decisions and if such reinvestment is consistent with its investment policy, or

in the proportion expected to be selected by policyholders if policyholders control investment decisions.

.13 The limitation on reinvestment in non-debt instruments is intended to apply in situations where reflecting increased utilization of these instruments would reduce the policy liabilities.

.14 For a prescribed scenario, if the net cash flow for a period is negative, then the actuary would assume an offsetting disinvestment or borrowing, or a mix of the two. For insurer controlled investment decisions, any borrowing would be in accordance with the investment policy, would be short term, and would be expected to be soon repayable by subsequent positive forecasted net cash flow.

.15 The prescribed scenarios provide guidance on interest rates for sale and purchase of investments and on the type and term of investments purchased, but provide no guidance on the type and term of investments sold.

.15.1 The prescribed range of short-term Canadian risk-free interest rates for the ultimate forecast period is calculated as follows (but see also paragraph 2330.153 below for limitations). The lower bound of the short-term rates is determined as the lesser of 3%, and the rate determined by taking 90% of the sum of 1/2 of the 60 month and 120 month moving averages of historic 91-day Canadian risk-free interest rates. The upper bound of the short-term rates is determined as the greater of 10%, and 110% of the sum of 1/2 of the 60 month and 120 month moving averages of historic 91 day Canadian risk- free rates. These range bounds are rounded to the nearest 10 basis points. The 91 day Canadian risk-free interest rate is defined as the effective annual rate equivalent to the Short Rate: V122531 - Government of Canada 91 Day Treasury Bill Yield rate which is compounded quarterly.

.15.2 The prescribed range of long-term Canadian risk-free interest rates for the ultimate forecast period is calculated as follows (but see also paragraph 2330.153 below for limitations). The lower bound of the long-term rates is determined as the lesser of 5%, and the rate determined by taking 90% of the sum of 1/2 of the 60 month and 120 month moving averages of historic long-term Canadian risk-free bond interest rates (term-to-maturity >10 years). The upper bound of the long-term rates is determined as the greater of 12%, and 110% of the sum of 1/2 of the 60 month and 120 month moving averages of historic long-term Canadian risk-free bond interest rates (term-to-maturity >10 years). These range bounds are rounded to the nearest 10 basis points. The long-term Canadian risk-free bond interest rate (term-to-maturity >10 years) is defined as the effective annual rate equivalent to the Long Rate: V122544 - Government of Canada Benchmark Bond Yield – Long Term rate which is compounded semi-annually.

.15.3 The width of the prescribed range of interest rates is exactly 7%. As a result, if the lower bound of the range is below 3% (short-term) or 5% (long-term), the upper bound of the range will be adjusted to be exactly 7% larger than the lower bound. Similarly, if the upper bound of the range is above 10% (short-term) or 12% (long-term), the lower bound of the range will be adjusted to be exactly 7% less than the upper bound.

.16 The parameters in the prescribed scenarios apply to investments denominated in Canadian dollars. For each prescribed scenario, the actuary would determine the corresponding parameters for investments denominated in a foreign currency from the historical relationship between investments denominated in that currency and investments denominated in the Canadian dollar if the expected continuance of that relationship so permits. Otherwise the actuary would devise independent scenarios for investments denominated in that currency.

.17 For each of prescribed scenarios 1 to 6 the insurer's reinvestment strategy for debt instruments by type and term

> at the balance sheet date is the distribution which the insurer is then purchasing,
>
> at and after the 20th anniversary of the balance sheet date is risk-free coupon bonds with a term of 20 -years or less, and

between those two dates is according to a uniform transition from the balance sheet date distribution to risk-free coupon bonds with a term of 20 years or less.

Prescribed scenario 1

.18 The risk-free interest rates for investments purchased or sold

> at the balance sheet date are those for the distribution of investments which the insurer is then making,
>
> at the first anniversary from the balance sheet date are 90% of the risk-free rates at the balance sheet date,
>
> at and after the 20th anniversary of the balance sheet date are the lower bounds of the short-term and long-term rates as described in paragraphs 2330.15.1 through 2330.15.3, and
>
> between the last two dates are determined according to a uniform transition from the first anniversary rates to the lower bounds of the prescribed range.

Interest rates between the short-term and long-term bounds are determined using yield rates that are appropriate for the terms of those assets, in accordance with the historic relationship between the rates of those assets and the short-term and long-term interest rates.

Prescribed scenario 2

.19 This scenario is the same as prescribed scenario 1, with the 90% replaced by 110% and with the short-term lower bound replaced by the short-term upper bound and the long-term lower bound replaced by the long-term upper bound.

Prescribed scenario 3

.20 The long-term risk-free interest rate moves cyclically in 1% steps between the long-term lower and upper bounds of the prescribed range determined in paragraphs 2330.15.1 through 2330.15.3. The first cycle is irregular; at the first anniversary of the balance sheet date, the rate is

> the next step higher, such that the interest rate is an integral difference from the bounds of the range, if the actual rate at the balance sheet date is less than the long-term upper bound, with the rate at subsequent anniversaries increasing in 1% steps to the long-term upper bound, at which point the cycle continues regularly, and
>
> the next step lower, such that the interest rate is an integral difference from the bounds of the range, if the actual rate at the balance sheet date is equal to or greater than the long-term upper bound, with the rate at subsequent anniversaries decreasing in 1% steps to the long-term upper bound, at which point the cycle continues regularly.

.21 The short-term risk-free interest rate changes uniformly over a period, usually not more than three years, from that at the balance sheet date to 60% of the corresponding long-term interest rate, and thereafter remains at 60% of the corresponding long-term interest rate.

.22 Other interest rates are determined using yield rates that are appropriate for the terms of those assets, in accordance with the historic relationship between the rates of those assets and the short and long-term interest rates.

Prescribed scenario 4

.23 This scenario is the same as prescribed scenario 3, except that the first irregular cycle reaches the long-term lower bound rather than the long-term upper bound.

Prescribed scenario 5

.24 This scenario is the same as prescribed scenario 3, except that the short-term interest rate at an anniversary of the balance sheet date is a percentage of the corresponding long-term interest rate. That percentage moves cyclically in 20% annual steps from 40% to 120% and back. The first cycle is irregular; at the first anniversary, the percentage is

> the next step above the actual percentage at the balance sheet date if that actual percentage is less than 120%, and
>
> 120% otherwise,

after which the cycle continues regularly.

Prescribed scenario 6

.25 As respects long-term interest rate, this scenario is the same as prescribed scenario 4.

.26 As respects short-term interest rate, this scenario is the same as prescribed scenario 5, except that, at the first anniversary of the balance sheet date, the percentage is

> the next step below the actual percentage at the balance sheet date if that actual percentage is more than 40%, and
>
> 40% otherwise.

Prescribed scenario 7

.27 The interest rates for investment purchased or sold are 100% of the Base Scenario at the balance sheet date and 90% of the Base Scenario at the first anniversary from the balance sheet date and all following durations.

Prescribed scenario 8

.28 The interest rates for investment purchased or sold are 100% of the Base Scenario at the balance sheet date and 110% of the Base Scenario at the first anniversary from the balance sheet date and all following durations.

Prescribed scenario 9

.29 This scenario assumes continuance of risk-free interest rates and the premiums for default risk consistent with the current investment strategy and risk premiums available in the market at the balance sheet date.

Other deterministic scenarios

.30 In addition to the prescribed scenarios, which are common to the calculation of policy liabilities for all insurers, the actuary would also select other scenarios which are appropriate to the circumstances of the case. If current rates are near or outside the limits of the prescribed ranges defined, then some scenarios would include rates that, in the near term, are outside the prescribed ranges. The reasonableness of degrees of change of interest rates is largely dependent on the period of time being considered. Other plausible scenarios include parallel shifts up and down as well as flattening and steepening of the yield curve. The scenarios would include those in which the premiums for default risk range from 50% to 200% of the actual premiums at the balance sheet date.

.31 The number of other interest rate scenarios would be relatively large to the extent that

the pattern of forecasted net cash flow in the Base Scenario is such that the classification of scenarios between favourable and unfavourable is unclear,

forecasted net cash flow is sensitive to the selection of interest rate scenarios,

the range of present values of forecasted net cash flow is wide, suggesting exposure to mismatch risk,

investment policy does not control mismatch risk,

asset-liability management is loose, or

flexibility to manage assets or liabilities is limited.

Stochastic scenarios

.32 If stochastic modelling is performed, the actuary would ensure that the stochastic model includes scenarios that generate policy liabilities outside the range produced by application of the prescribed deterministic scenarios.