

Prudential Standard FSI 2.2

Valuation of Technical Provisions

Objectives and Key Requirements of this Prudential Standard

This Standard sets out the requirements for valuing insurance liabilities for the purposes of assessing regulatory financial soundness.

The ultimate responsibility for the value of an insurer's insurance liabilities rests with the board of directors of an insurer. The head of actuarial function is responsible for providing impartial advice to the board of directors on the valuation of insurance liabilities, and its impact on the overall financial soundness of the insurer.

The key principles and requirements of this Standard are:

- *Insurers must establish technical provisions that correspond to the current value of their insurance obligations;*
- *Insurers must segment their insurance obligations into homogeneous risk groups when calculating the value of technical provisions;*
- *The valuation of the technical provisions should incorporate a best estimate and a risk margin, although under certain conditions, the valuation may be performed as a whole;*
- *Insurers must use actuarial and statistical techniques that are proportionate to the nature, scale and complexity of the risks to value their technical provisions;*
- *Amounts relating to recoverables must be calculated separately as part of the valuation of technical provisions;*
- *The valuation of technical provisions must take account of the time value of money by using the relevant risk-free interest rate term structure specified by the Prudential Authority; and*
- *Insurers are permitted to apply simplified methods in valuing technical provisions, subject to such methods satisfying the principle of proportionality.*

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1. Application

- 1.1. This Standard applies to all insurers licensed under the Insurance Act, 2017 (the Act), other than microinsurers, Lloyd's and branches of foreign reinsurers.
- 1.2. Unless otherwise indicated, all references to “insurer” in this Standard can be read as a reference to life insurers, non-life insurers and reinsurers. Similarly, a reference to “insurance” obligations/policies in this Standard can be read as a reference to “reinsurance” obligations/policies, unless otherwise specified.

2. Roles and Responsibilities

- 2.1. An insurer's board of directors is ultimately responsible for ensuring that the valuation of the insurer's liabilities stemming from its insurance obligations complies with the principles and requirements set out in this Standard. The board of directors must ensure that the insurer has in place the necessary resources, systems, procedures and controls to value insurance liabilities according to the requirements of this Standard on an ongoing basis. This includes making arrangements that allow the insurer's senior management (including head of actuarial function) to collate the relevant data and information necessary to value insurance liabilities under this Standard.
- 2.2. The head of actuarial function is responsible for expressing an opinion to the board of directors on the valuation of insurance liabilities, and its impact on the overall financial soundness of the insurer. In providing this opinion, the head of actuarial function must have regard to the principles and requirements of this Standard, and relevant professional standards of the Actuarial Society of South Africa.
- 2.3. An insurer's auditor appointed under section 32 of the Act must audit the financial soundness of an insurer in accordance with its legal and regulatory obligations. The auditor must report to the board of directors and Prudential Authority any matters identified during the performance of its responsibilities that may cause the insurer to be not financially sound.
- 2.4. The roles and responsibilities of the board of directors and the head of actuarial function are described in more detail in the Governance and Operational Standards for Insurers (GOI 3).

3. Commencement and Transition Provisions

- 3.1. This Standard commences on 1 July 2018.

Version Number	Commencement Date
1	1 July 2018

4. General Principles for Valuing Technical Provisions

- 4.1. Insurers must establish technical provisions that correspond to the value of their insurance obligations in the event that such obligations were to be transferred immediately (i.e. at the valuation date) to another insurer.
- 4.2. The value of technical provisions must comprise a best estimate and a risk margin. The best estimate must be calculated on a gross basis, without deducting the amounts recoverable from reinsurance contracts and other risk mitigation instruments. The risk margin must be calculated by reference to the cost of providing an amount of eligible own funds necessary to support insurance obligations over their lifetime. For certain products and under certain conditions, the best estimate and risk margin may be calculated as a whole when valuing technical provisions.
- 4.3. Insurers must segment their insurance obligations into homogeneous risk groups when valuing technical provisions. At a minimum, this segmentation must be undertaken in accordance with the lines and/or sub-lines of business set out in this Standard.¹
- 4.4. Insurers must use actuarial and statistical techniques that are proportionate to the nature, scale and complexity of their risks (referred to as the “principle of proportionality” in this Standard) to value their technical provisions.
- 4.5. The valuation of technical provisions must take account of the time value of money by using the relevant risk-free interest rate term structure as prescribed in this Standard.
- 4.6. Insurers are permitted to apply simplified methods in valuing technical provisions, subject to satisfying the principle of proportionality. This includes simplified methods for valuing the best estimate and the risk margin.

5. Segmentation

- 5.1. In valuing technical provisions, insurers must segment their insurance obligations into, at a minimum, the (sub-)lines of business prescribed in this Standard. The prescribed (sub-)lines of business are set out in Attachment 1 of this Standard.
- 5.2. The purpose of segmentation is to prevent potential distortions in the valuation process that may arise from combining dissimilar (sub-)lines of business. Insurers will typically manage their products and businesses using more granular risk groups than the (sub-)line of business segments prescribed in Attachment 1. In calculating technical provisions, insurers may segment their business

¹ The term “(sub-)line of business” is used throughout the remainder of this Standard to refer to a line and/or sub-line of business.

according to the level of granularity most appropriate to them. However, once calculated, insurers must allocate and report the results of their technical provisions into the (sub-)lines of business prescribed in Attachment 1.

- 5.3. For financial soundness purposes, segmentation must be based on the nature of the risks underlying the insurance obligation rather than the legal form of the insurance contract, i.e. principle of “substance over form”. Insurers must apply the principle of substance over form when segmenting between life and non-life insurance obligations when valuing technical provisions. This requires:
- a) Insurance obligations pursued on a similar technical basis to that of life insurance to be considered as life insurance obligations, even if they are non-life insurance from a legal perspective;
 - b) Insurance obligations not pursued on a similar technical basis to that of life insurance to be considered as non-life insurance obligations, even if they are life insurance from a legal perspective; and
 - c) Annuities stemming from non-life insurance contracts to be treated as life insurance obligations.

Guidance Note FSI GN 2.2 provides further guidance on the principle of substance over form and how it applies to annuities in non-life insurance.

- 5.4. Where an insurance policy includes life and non-life insurance obligations, the policy must be unbundled into the life and non-life parts wherever possible, and where both parts are material. Where only one of the risks covered by an insurance policy is material, the contract may be bundled and allocated to the main risk.
- 5.5. Segmentation must be applied to both the valuation of the best estimate and risk margin. Segmentation must also be applied where technical provisions are calculated as a whole.

6. Methodology for Valuing the Best Estimate

- 6.1. The best estimate refers to the probability-weighted average of an insurer’s future cash-flows stemming from its insurance business, taking into account the time value of money and all possible scenarios² of future potential outcomes.
- 6.2. Insurers must use actuarial and statistical techniques when valuing the best estimate, with the techniques adopted appropriately reflecting the risks which affect the cash-flows. This may include simulation methods, deterministic techniques and analytical techniques.
- 6.3. The valuation of the best estimate should involve cash-flow projections that take into account the timing and uncertainty of future cash-flows. The valuation should consider the variability of cash-flows and ensure that the best estimate represents the mean of the distribution of potential outcomes. Cash-flow characteristics that should be taken into account in the projection include:
- a) Uncertainty in the timing, frequency and severity of claim events;
 - b) Uncertainty in claims amounts and the period needed to settle claims;

² Although, in principle, all possible scenarios should be considered, it may not be possible to explicitly incorporate all possible scenarios in the valuation. Consequently, an insurer may adopt a method that implicitly allows for all possible scenarios, such as the use of closed form solutions in life insurance, or the chain-ladder technique in non-life insurance.

- c) Uncertainty in the amount of expenses;
 - d) Uncertainty in the value of an index used to determine claim amounts;
 - e) Uncertainty in both entity and portfolio-specific factors such as legal, social, or economic environmental factors;
 - f) Uncertainty in policyholder behaviour;
 - g) Path dependency, where the cash-flows depend not only on circumstances such as economic conditions on the cash-flow date, but also on those circumstances at previous dates; and
 - h) Interdependency between two or more causes of uncertainty.
- 6.4. The best estimate must be valued separately for obligations in different currencies. The time value of money of future cash-flows in different currencies must be valued using the risk-free interest rate term structure of the relevant currency (refer to section 13.3 below).
- 6.5. The best estimate must be valued on a gross basis, without deducting amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments. Recoverables from eligible reinsurance and other eligible risk mitigation instruments must be calculated separately. Where co-insurance applies, the cash-flows of each co-insurer must be calculated based on the proportion of the expected cash-flows for each insurer, without deducting amounts recoverable from eligible reinsurance and other eligible risk mitigation instruments.

Cash-flow projections

- 6.6. Cash-flow projections must reflect expected realistic future demographic, legal, medical, technological, social or economic developments.
- 6.7. Cash-flow projections must incorporate appropriate assumptions for future inflation, including appropriate recognition of the type of inflation to which particular cash-flows are exposed (e.g. consumer price index or salary inflation). To the extent insurers use premium adjustment clauses to offset the effects of claims inflation for certain policies, insurers must be satisfied that any offset does not undervalue the best estimate or underestimate the risks involved.
- 6.8. The projection horizon used must cover the full lifetime of cash in-flows and out-flows required to settle insurance obligations of existing policies. Determining the lifetime of insurance obligations must be based on up-to-date and credible information, as well as realistic assumptions about when existing insurance obligations will be discharged, cancelled or expired.
- 6.9. Attachment 2 of this Standard provides further details on the types of cash in-flows and out-flows that must be considered as part of the cash-flow projections to value technical provisions.

Issues specific to the valuation of technical provisions for life insurance

- 6.10. The valuation of life insurance obligations should generally be based on a policy-by-policy approach. Under certain conditions, however, simplified actuarial techniques and approximations may be used to group policies when projecting future cash-flows for these policies. In particular, the projection of future cash-flows based on suitable model points³ is permitted under the following conditions:

³ A model point is a representative policy with particular liability characteristics.

- a) The grouping of policies and their representation by model points does not misrepresent the underlying risk or significantly misstate the costs of satisfying the relevant insurance obligations;
 - b) The grouping of policies does not distort the valuation of technical provisions (e.g. by forming groups containing life policies with guarantees that are "in the money" and life policies with guarantees that are "out of the money"); and
 - c) Sufficient validation has been performed to verify that the grouping of life policies does not lead to the loss of any significant attributes of the portfolio being valued.⁴
- 6.11. In certain circumstances, the best estimate may be negative (e.g. for some individual policies). Insurers should not set to zero the value of the best estimate in these circumstances. Negative technical provisions that arise from assumed reinsurance, however, must be adjusted to allow for the risk of counterparty default, based on the requirements set out in Attachment 3 of this Standard.
- 6.12. No implicit or explicit surrender value floor should be assumed for the market-consistent value of liabilities of a life insurance policy. This means that if the sum of the best estimate and the risk margin for a policy is lower than the surrender value of the policy, the value of the insurance liabilities should not increase to the surrender value of the policy.

Issues specific to the valuation of technical provisions for non-life insurance

- 6.13. For non-life insurers, a separate valuation of the best estimate must be carried out for provisions for claims outstanding, premium provisions and "other technical provisions" (as specified in section 6.18 below).
- 6.14. The cash-flow projections with respect to the best estimate for premium provisions relate to claim events occurring after the valuation date and during the remaining coverage period of existing policies. The cash-flow projection for this component of the valuation should comprise all future claim payments and claims administration expenses arising from these claim events, ongoing administration expenses of the existing policies, and expected future premiums stemming from existing policies.
- 6.15. In some circumstances, the cash in-flows related to the premium provisions may exceed the cash out-flows, leading to a negative best estimate. Insurers should not set to zero the value of the best estimate in these circumstances. The valuation should take account of the time value of money where risks in the remaining period would give rise to claims settlements in the future.
- 6.16. The valuation of premium provisions must also take account of future policyholder behaviour such as the likelihood of policy lapse during the remaining period.
- 6.17. The cash-flow projections with respect to the best estimate for provisions for claims outstanding relate to claim events that have occurred before the valuation date – regardless of whether the claims arising from these events have been reported or not (i.e. all incurred but not settled claims). The cash-flow projections

⁴ Special attention should be given to the amount of guaranteed benefits and any possible restrictions (legislative or otherwise) for an insurer to treat different groups of policyholders fairly.

for this component of the best estimate must comprise all future claim payments as well as claims administration expenses arising from the claim events.⁵

- 6.18. In relation to the best estimate for “other technical provisions”, non-life insurers are required to value separately the following components:
- a) Cash-back and other loyalty provisions – insurers are required to value the total technical provisions per (sub-)line of business for insurance policy benefits that entitle a policyholder to predetermined benefits on the expiry of a specified period and under specified circumstances. This includes loyalty benefits that depend solely on whether or not the policyholder lapses.
 - b) Contingent commission provisions – insurers are required to value the total technical provisions per (sub-)line of business for contingent commissions payable by a reinsurer to a cedent under a reinsurance agreement where these contingent commissions depend on the profitability of the total business ceded.
 - c) Other contingent payment provisions – insurers are required to value the total technical provisions per (sub-)line of business for any other contingent payments or benefits payable to a policyholder in relation to an insurance policy. This includes experience account balances offered on contingency policies, or similar policyholder or third-party profit-sharing structures.
- 6.19. Where non-life insurance policies give rise to the payment of annuities, the principle of substance over form detailed in section 5.3 above must be followed. The assessment of the premium provisions component of the technical provisions should include an appropriate calculation for annuity obligations, if a material amount of incurred claims is expected to give rise to the payment of annuities.

Assumptions underlying the valuation of the best estimate

Assumptions consistent with information provided by financial markets

- 6.20. Assumptions consistent with information about or provided by financial markets include:
- a) Relevant risk-free interest rate term structure;
 - b) Currency exchange rates; and
 - c) Market inflation rates (consumer price index or sector inflation).
- 6.21. When insurers derive assumptions on future financial market parameters or scenarios, they must be able to demonstrate that the choice of assumptions is appropriate and consistent with the valuation principles set out in FSI 2 (Valuation of Assets, Liabilities and Eligible Own Funds).
- 6.22. Where the insurer uses a model to produce future projections of market parameters (“market-consistent asset model”), the model must:
- Generate asset prices that are consistent with deep, liquid and transparent financial markets;⁶
 - Assume no arbitrage opportunities;

⁵ For clarity, all allocated and unallocated administration expenses associated with the claim events must be included in the cash-flow projections for these provisions.

⁶ If the derivation of a parameter is not possible by means of prices from deep, liquid and transparent markets, other market prices may be used having regard to any distortions with the use of other market prices.

- Allow for a properly calibrated volatility measure; and
 - Be calibrated to reflect the nature and term of the liabilities, and the current risk-free interest rate term structure used to discount cash-flows.
- 6.23. The calibration of asset models may be based on simplified statistical analysis of economic variables, provided they produce market-consistent results.

Assumptions consistent with generally available data on insurance technical risks

- 6.24. Generally available data on insurance risks refers to both:
- a) Internal data, which refers to all data which is available from an insurer's internal sources; and
 - b) External data sources, such as industry or market data.
- 6.25. All relevant available data, whether internal or external, should be taken into account to derive assumptions that best reflect the characteristics of the underlying insurance portfolio.
- 6.26. The extent to which internal data is taken into account should be based on the:
- a) Availability, quality and relevance of external data; and
 - b) Amount and quality of internal data.
- 6.27. Where insurers use data from an external source, they must derive assumptions on underwriting risks that are based on that data according to the following requirements:
- a) The insurer can demonstrate that the sole use of data which is available from an internal source is not more suitable than external data; and
 - b) The origin of the data, and assumptions or methodologies used to process them, is known to the insurer and the insurer is able to demonstrate that these assumptions and methodologies appropriately reflect the characteristics of the portfolio.

Assumptions about policyholders' behaviour

- 6.28. Insurers are required to consider policyholders' behaviour in the valuation of the best estimate.
- 6.29. Any assumptions made by insurers with respect to the likelihood that policyholders will exercise contractual options, including lapses and surrenders, must be realistic and based on current and credible information. The assumptions must take into account, either explicitly or implicitly, the impact that future changes in financial and non-financial conditions may have on the exercise of options.
- 6.30. Assumptions about the likelihood that policyholders will exercise contractual options should be based on analysis of past policyholder behaviour. This analysis should take into account:
- a) How beneficial the exercise of the options was or would have been to the policyholders under past circumstances;
 - b) The influence of past economic conditions;
 - c) The impact of past management actions;
 - d) How past projections compared to the actual outcome; and

- e) Any other circumstances likely to influence a decision whether to exercise the option.

The likelihood that policyholders will exercise contractual options, including lapses and surrenders, should not be assumed to be independent of the factors noted above, unless evidence to support such an assumption can be observed.

Management actions and risk mitigation instruments

- 6.31. The valuation of technical provisions for insurance liabilities should take account of potential future actions by the management of an insurer, and other risk mitigation instruments employed to manage an insurer's risks.
- 6.32. A "future management action" refers to all mechanisms or actions approved by a governance structure within the insurer that will be implemented in response to the occurrence of a specified adverse event, whereby the actions aim to reduce the impact of the specified adverse event on the insurer's net asset value.
- 6.33. The following (non-exhaustive) list of actions may be considered as future management actions:
 - a) Changes in asset allocation to manage fund returns, liquidity risks, asset/liability mismatch risk, target asset mixes and changes in market conditions;
 - b) Changes in bonus rates or product changes, such as changes to policies with profit participation to mitigate market risks;
 - c) Changes in fees charged to policyholders, such as administration or investment management charges on linked business;
 - d) Changes in assumed future market value adjustment factors;
 - e) Renewal of outwards reinsurance arrangements;
 - f) Renewal of hedging strategies; and
 - g) Revision of premium rates.
- 6.34. A "risk mitigation instrument" refers to all instruments and arrangements in which an insurer is able to transfer part or all of their risks to another party.
- 6.35. For clarity:
 - a) Risk mitigation instruments that are planned but are not yet in place should be considered to be future management actions;
 - b) Risk mitigation instruments that are already in place should not be considered to be future management actions; and
 - c) The impact of changes to a risk mitigation instrument approved by the insurer's governance structure may be recognised, provided the risk mitigation instrument is already in place at the valuation date and the change is not conditional on any future event that is outside the control of the insurer.
- 6.36. Assumptions on future management actions and risk mitigation instruments used in the valuation of technical provisions must be determined in an objective manner. Assumptions must be realistic and consistent with the insurer's current business practice and business strategy, unless there is sufficient evidence that the insurer will change its practices. For insurance policies with discretionary participation features, assumed future management actions must also be consistent with the insurer's principles and practices of financial management policy.

- 6.37. Assumed future management actions and the effect of risk mitigation instruments should be consistent with each other and with the assumptions used in the valuation of the technical provisions. The costs related to the assumed future management action or risk mitigation instrument, and the potential market capacity to transfer risk under each specific scenario, should also be assessed.
- 6.38. Insurers must not assume that future management actions and the effect of risk mitigation instruments can be taken if they are contrary to the obligations they owe to policyholders and beneficiaries, or contrary to their legal obligations. The assumed future management actions should take account of any public indications by the insurer as to the actions that it would be expected to take, or not take, in the circumstances being considered.
- 6.39. Assumptions about future management actions must take account of the potential impact of such management actions and the time needed to implement them and any expenses caused by them.
- 6.40. Insurers should be able to verify that assumptions about future management actions are realistic through a comparison of assumed future management actions with actual management actions previously taken.

Expert judgement

- 6.41. In certain circumstances, expert judgement may be used in the valuation of the best estimate. Expert judgement may be used in relation to the data, assumptions and techniques used to value the best estimate.
- 6.42. The use of expert judgement must be well-founded, documented, transparent and subject to validation. Insurers should document the processes leading to the use of expert judgement, allowing an external party to account for and verify the judgements made.

7. Recognition of Insurance Contracts

- 7.1. The valuation of the best estimate must only include future cash-flows associated with existing insurance policies.
- 7.2. For the purposes of this Standard, an insurer must recognise an insurance policy that it issues from the earliest of the following dates:
 - a) The beginning of the coverage period;
 - b) The date on which the first payment from the policyholder becomes due. If there is no contractual due date, the date when the first payment is received from the policyholder should be deemed to be the due date; or
 - c) If applicable, the date on which the portfolio of insurance contracts to which the policy will belong becomes “onerous”.⁷ The consideration of onerous portfolios of contracts should not apply to loss-making treaties issued by reinsurers where the terms of the treaty allow the reinsurer to increase rates at a review point.
- 7.3. Insurers must not recognise any cash-flows before the applicable inception date described in section 7.2 above, even if premiums have been received. Any

⁷ The International Financial Reporting Standards (IFRS) definition of “onerous” applies. IFRS defines an onerous contract as one in which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it.

amounts received prior to the applicable inception date must be held as “current liabilities” (as defined by the relevant International Financial Reporting Standard) until the inception date.

- 7.4. Insurers must not recognise as an asset or liability any amounts relating to expected premiums that are outside the contract boundary (refer to section 8 below for the definition of the contract boundary).
- 7.5. An insurance policy should be derecognised as an existing contract only when the obligation specified in the policy expires, or has been discharged or cancelled.

8. Contract Boundary

- 8.1. The best estimate liability must be determined as the discounted value of projected cash-flows up to the contract boundary.
- 8.2. For the purpose of determining which insurance obligations arise in relation to an insurance contract, the contract boundary is defined as the date in which the insurer has the unilateral right to:
 - a) Terminate the contract;
 - b) Reject the premiums payable under the contract; or
 - c) Amend the premiums or benefits payable under the contract at a future date in such a way that the premiums fully reflect the risks.

Any insurance obligation provided by the insurer after the contract boundary does not belong to the existing contract, unless the insurer can compel the policyholder to pay the premium for those obligations.

- 8.3. An insurer has a unilateral right to review policy conditions when there are no constraints to prevent it from setting the same price as it would for a new contract, or if it can amend the benefits to be consistent with those that it would provide for the price that it will charge in the future. The unilateral right to review policy conditions should reflect a legal right, but should also consider policyholder reasonable expectations, policyholder behaviour, as well as market pressures.
- 8.4. In setting the contract boundary, allowance may be made for variations in future renewal premiums that are reasonably predictable and based on reliable evidence, but should not include any premiums in respect of future contracts. Certain one-off premiums in respect of existing business may be regarded as a new contract if the contractual terms are different to those of the existing policy. At the contract boundary, a full surrender of the contract should be assumed and no further projected cash-flows should be allowed beyond this point.
- 8.5. Where the insurer has a unilateral right as referred to in section 8.2 above that relates to only a part of the contract, the principles in section 8.2 above apply to that part of the contract. All other obligations relating to the contract, including obligations relating to unilateral rights of the insurer to renew and extend the scope of the contract, must be assumed to belong to the existing contract.
- 8.6. Restrictions on the right to terminate a contract, or reject premiums payable under a contract, that have no discernible effect on the economics of the contract must be ignored for the purposes of determining the contract boundary.

- 8.7. Where an insurer relies on the condition in section 8.2c) above to define the contract boundary, premiums should only be regarded as fully reflecting the risks covered by a portfolio of insurance obligations if there are no material scenarios whereby the amount of the expected benefits and expected expenses payable under the portfolio would exceed the amount of the expected premiums payable under the portfolio.
- 8.8. Notwithstanding the provision in section 8.7 above, in the case of life insurance obligations where an individual risk assessment of the obligations relating to the insured person is carried out at the inception of the contract, and that assessment cannot be repeated before amending the premiums or benefits, the assessment of whether the premiums fully reflect the risk in accordance with section 8.2c) above must be made at the level of the contract.
- 8.9. For insurance contracts where the boundary determined on the basis of this Standard is extremely short (i.e. less than or equal to 91 days), insurers may assume a zero-day boundary as the additional complexity in valuing fees, expenses and a range of other measures is unlikely to be justified when considering the limited impact to the overall best estimate valuation.
- 8.10. Further guidance regarding the determination of the contract boundary for different types of insurance products and reinsurance contracts can be found in Guidance Note FSI GN 2.2.

9. Recognition of Insurance Premiums

- 9.1. Insurance policies involving multiple premiums, where the contract boundary is longer than the intervals between premium payments, must have the premiums recognised in the following manner for the purposes of valuing technical provisions:
 - a) Non-life insurers must recognise the full premium due, or expected to become due, upfront, and create a premium debtor equal to the amount expected to become due in future.
 - b) Life insurers must only recognise premiums that have become due prior to the valuation date; premiums that are expected to become due in the future should be incorporated in the cash-flow projection.
- 9.2. For clarity, the application of section 9.1 above in relation to certain types of policies is set out below:
 - a) Annual paid monthly business (e.g. annual policies in which premiums are due in monthly instalments) – the full annual premium should be recognised as soon as the policy incepts, and a premium debtor for the portion of premiums that will only become due in the future should be raised. If the contract boundary is assumed to be one year, premiums expected to become due after the valuation date, but within the contract boundary, should be reflected in the projected future cash-flows of the technical provisions. Premiums that have already become due, but have not been received, should also be reflected as a premium debtor in the balance sheet, unless non-payment has already resulted in the policy being cancelled or lapsed.
 - b) Reinsurance covering annual paid monthly business – where proportional reinsurance is offered on a portfolio including annual paid monthly policies, the reinsurer's share of the expected annual premium typically becomes due to the reinsurer at the underlying policies' inception dates. The reinsurer

- should recognise the full annual premium at the inception date, consistent with the premium recognition approach of the insurer.
- c) Non-proportional reinsurance – the premiums for non-proportional reinsurance contracts should recognise the full expected contract premium upfront, including the minimum and deposit premium, and the expected value of any adjustment premium that will become due.
- 9.3. Premiums received prior to the coverage period must not be recognised but instead held as current liabilities (as per section 7.3 above). For extended warranty policies (where premiums are usually due a few years prior to the effective coverage period), insurers must recognise the premium at the contract inception date, and raise the full amount as an unearned premium reserve until the coverage period commences.
- 9.4. Reinsurers must determine the contract boundaries of their reinsurance contracts taking into consideration when it would be practically possible to cancel a contract. All underlying policies incepting during the contract boundary period should be allowed for. Premiums should be recognised as set out in section 9.1 above.
- 9.5. Insurers that issue policies that provide the policyholder with the option to extend the policy, or to increase the amount covered by simply notifying the insurer, must not recognise the future expected premiums related to such extensions.⁸ Such premiums, together with any associated claims and other cash-flows, should be included in the future cash-flow projections.

10. Valuation of Options and Guarantees

- 10.1. Insurers must identify all contractual options and guarantees embedded in their insurance policies.
- 10.2. A contractual option is defined as a right to change the benefits⁹ of a policy, to be taken at the choice of its holder (generally the policyholder), on terms that are established in advance. Some examples of contractual options include:
- a) Surrender value option, where the policyholder has the right to fully or partially surrender the policy and receive a pre-defined lump sum amount;
 - b) Paid-up policy option, where the policyholder has the right to stop paying premiums and change the policy to a paid-up status;
 - c) Annuity conversion option, where the policyholder has the right to convert a lump survival benefit into an annuity at a pre-defined minimum rate of conversion;
 - d) Policy conversion option, where the policyholder has the right to convert from one policy to another at pre-specified terms and conditions; and
 - e) Extended coverage option, where the policyholder has the right to extend the coverage period at the expiry of the original policy without producing further evidence of health.
- 10.3. A guarantee may be financial or non-financial. A financial guarantee arises when there is a possibility to pass losses to the insurer or to receive additional

⁸ These policies typically apply in non-life insurance, such as engineering guarantees that provide the policyholder with the option extend the policy at the end of the original guarantee period.

⁹ This should be interpreted as also including the potential for reduction of the level of premiums that would be charged in the future.

benefits¹⁰ as a result of changes in financial variables (solely or in conjunction with non-financial variables). Some examples of financial guarantees embedded in insurance policies include:

- a) Guaranteed invested capital;
- b) Guaranteed minimum investment return; and
- c) Profit sharing.

- 10.4. Non-financial guarantees provide benefits that are driven by changes in non-financial variables, such as reinstatement premiums in reinsurance and experience adjustments to future premiums.
- 10.5. Insurers must take account of the value of any contractual options and financial guarantees included in their insurance policies when valuing technical provisions. Where non-financial guarantees are material, the valuation must also take into account these guarantees using techniques applied to financial guarantees.
- 10.6. For each type of contractual option and guarantee, insurers must identify the risk drivers which have the potential to materially affect the current intrinsic value of the option or guarantee under a range of scenarios. For contractual options, insurers must identify the risk drivers which have the potential to materially affect the frequency of option take-up rates under a range of scenarios.
- 10.7. The best estimate of contractual options and guarantees must capture the intrinsic value, timing and uncertainty of cash-flows, taking into account the likelihood and severity of outcomes from multiple scenarios combining the relevant risk drivers.
- 10.8. The best estimate of contractual options and guarantees may be valued using a:
 - a) Stochastic approach, including closed-form or stochastic simulation approach;
 - b) Series of deterministic projections; and/or
 - c) Deterministic valuation based on expected cash-flows.

The approach used to value the best estimate of contractual options and guarantees should be proportionate to the nature, scale and complexity of the insurer's business.

- 10.9. If a stochastic simulation approach is used to value the best estimate of contractual options and guarantees, the approach should consist of an appropriate market-consistent asset model for projections of asset prices and returns. It should also comprise of a dynamic model that incorporates the corresponding value of liabilities and the impact of any future management actions.
- 10.10. If a deterministic approach is used, a range of scenarios appropriate to both valuing the contractual options or guarantees and the underlying asset mix, together with the associated probability of occurrence, should be set. The probabilities of occurrence should be weighted towards adverse scenarios to reflect market pricing for risk and be sufficiently numerous to capture a wide range of possible outcomes.
- 10.11. In the case of contractual options, the assumptions on policyholder behaviour should be appropriately founded in statistical and empirical evidence, unless

¹⁰ Ibid.

such evidence is not expected to be representative of future behaviour. The setting of policyholder behaviour assumptions should also consider:

- a) The potential for increased awareness of contractual options from policyholders in the future;
- b) Policyholders' possible reactions to changes in the insurer's financial position; and
- c) Other relevant publicly available information such as the state of financial markets or the insurer's past treatment of customers.

10.12. For life insurers, where the valuation of contractual options and guarantees is not performed on a policy-by-policy basis, the segmentation applied should not distort the value of the best estimate (e.g. by forming groups containing life policies with both guarantees that are "in the money" and "out of the money").

11. Treatment of Future Discretionary Benefits

11.1. Insurers that have policies with discretionary participation features must take into account future discretionary benefits which are expected to be made to policyholders when valuing technical provisions. For clarity:

- a) Linked policies should not be considered as having discretionary participation features;
- b) The value of financial and other guarantees should be included in the value of guaranteed benefits and excluded from the value of discretionary benefits;
- c) Discretionary benefits should include historic non-vesting claim bonuses as at the valuation date, other non-vesting bonuses, and future benefits assumed to be payable in terms of policyholder reasonable benefit expectations or considerations relating to the fair treatment of customers; and
- d) The value of discretionary benefits in the technical provisions must take into account the level of accumulated policyholder surplus or deficit at the valuation date. The assumed future bonus rates in the technical provisions should be set at a level at which any accumulated policyholder surplus or deficit at the valuation date is absorbed into the value of the technical provisions.

11.2. The distribution of future discretionary benefits should be regarded as a management action and assumptions about such management actions should satisfy the requirements set out in sections 6.36 to 6.40 of this Standard. Assumptions about the distribution of future discretionary benefits should take into account the relevant and material characteristics of the mechanism for distribution.

11.3. Where future discretionary benefits depend on the assets held by the insurer, the valuation of the best estimate should be based on the assets held by the insurer at the valuation date. Future changes to asset allocation should be treated as a separate future management action.

11.4. Where a risk-neutral approach to the valuation of assets is used, assumptions on returns of future investments underlying the valuation of discretionary benefits should not exceed the level given by the forward rates derived from the risk-free interest rate term structure.

12. Recoverables

- 12.1. Recoverables may arise from reinsurance contracts and other risk mitigation instruments. The valuation of the best estimate must be performed on a gross basis, without deducting amounts recoverable from eligible reinsurance and other eligible risk mitigation instruments.
- 12.2. Amounts recoverable from reinsurance contracts should be interpreted as the net amount recoverable from eligible reinsurance contracts, including reinsurance premiums, claim recoveries and other related cash-flows arising from the reinsurance arrangement.
- 12.3. The amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments must be calculated separately.¹¹ Recoverables from reinsurance arrangements that are not eligible as risk mitigation instruments must be excluded from the valuation of technical provisions.
- 12.4. For non-life insurers, amounts recoverable from reinsurance contracts and other eligible risk mitigation instruments should also be calculated separately for provisions for claims outstanding and for premium provisions. In performing this calculation, cash-flows relating to:
 - a) Provisions for claims outstanding should include the compensation payments relating to the claims accounted for in the gross provisions for claims outstanding of the insurer ceding risks; and
 - b) Premium provisions should include all other payments.
- 12.5. Any assumptions regarding the amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments used in the valuation of technical provisions must adhere to the principles and methodology set out in this section and Attachment 3 of this Standard. Notwithstanding this provision, insurers are not required to calculate a risk margin for amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments, given that a single net calculation of the risk margin should be performed (refer to section 14 below). Where insurers calculate a risk margin using an internal model, an insurer may use a single net calculation or two separate calculations.

Valuing the best estimate of amounts recoverable

- 12.6. In valuing amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments, insurers should take account of the time difference between payments and recoveries. Insurers should also take account of potential differences in the contract boundary between reinsurance recoverables and the underlying insurance obligations, and allow for possible changes to reinsurance contract terms in valuing the best estimate of recoverables. Where the timing of payments and recoveries markedly diverge, the difference in timing should be incorporated in the cash-flow projections.
- 12.7. Insurers should distinguish between events that relate to market risk and events that relate to underwriting risk. Only payments in relation to compensation of insurance events should be included when valuing the amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments. All payments that relate to the compensation for other events should not be included

¹¹ Where the risk mitigation instruments involve arrangements with a Special Purpose Vehicle (SPV), the amounts recoverable from the SPV should not exceed the value of the assets an insurer could recover from the SPV.

when valuing the amounts recoverable from reinsurance contracts and special purpose vehicles.

- 12.8. Payments in relation to settled insurance claims should not be included in the amounts recoverable from reinsurance contracts and other risk mitigation instruments. For example, debtors and creditors that relate to settled claims of policyholders or beneficiaries should not be included in the amounts recoverable from reinsurance contracts and special purpose vehicles.
- 12.9. If payments to the insurer from reinsurers or other counterparties to eligible risk mitigation instruments do not directly depend on the claims against the cedant¹², the amounts recoverable for future claims should only be taken into account to the extent it is possible for the structural mismatch between claims and amounts recoverable to be measured in a prudent, reliable and objective manner. The underlying risks associated with the mismatch must also be adequately reflected in the calculation of the Solvency Capital Requirement (SCR).
- 12.10. Expenses which the insurer incurs in relation to the management and administration of reinsurance contracts and other risk mitigation instruments must be included in the best estimate, calculated on a gross basis, without deducting amounts recoverable from reinsurance contracts and other risk mitigation instruments. No allowance for expenses relating to the internal processes should be made in the recoverables.

Adjustment of recoverables for expected losses due to counterparty default

- 12.11. Recoverables from eligible reinsurance contracts and other eligible risk mitigation instruments, as well as negative technical provisions arising from inwards reinsurance, must take account of expected losses due to default of the counterparty. The adjustment should be based on a market-consistent assessment of the probability of default of the counterparty, and the average loss resulting from this default (loss-given-default). The adjustment should be calculated separately.
- 12.12. Attachment 3 sets out further details of how the adjustment for expected losses due to counterparty default on recoverables should be calculated. Attachment 3 also sets out the circumstances and possible approaches where it may be appropriate to apply a simplified method for calculating the adjustment for expected losses.

13. Discount Rates

- 13.1. Unless otherwise approved by the Prudential Authority, insurers must use the government bond curve published by the Prudential Authority as the risk-free interest rate term structure to discount cash-flows for the purposes of valuing technical provisions.
- 13.2. An insurer may apply to the Prudential Authority to use an alternative interest rate term structure to discount cash-flows on liabilities that are matched with swap-based assets, and where those liabilities are valued using the relevant swap curve. If the Prudential Authority grants approval to use a swap curve, the swap curve must be constructed by the insurer using observable market data, and must not include any margins for credit or liquidity risk. For clarity,

¹² Instances where this may arise include arrangements where payments are made according to certain external indicators, such as an earthquake index or general population mortality.

investment management expenses must not be allowed for in the risk-free interest rates used in the valuation of technical provisions (they are to be included in the cash-flow projections instead – refer to Attachment 2).

- 13.3. For cash-flows denominated in currencies other than South African Rand (i.e. foreign currencies), insurers should determine the relevant risk-free interest rate term structure according to the method set out in Attachment 4 of this Standard.

Illiquidity premium for life annuities

- 13.4. For life annuity policies, insurers may apply an illiquidity premium to the risk-free interest rate term structure used to value the best estimate. The application of an illiquidity premium for life annuity policies is subject to the insurer meeting the following conditions:
- a) The insurer has assigned a portfolio of actual assets, consisting of bonds and other assets with similar cash-flow characteristics, to cover the best estimate of the portfolio of life annuity policies. The insurer must maintain the assignment of assets over the lifetime of the obligations (except for the purpose of maintaining the replication of cash-flows between assets and liabilities);
 - b) The portfolio of life annuity policies to which the illiquidity premium is applied, together with the assigned portfolio of assets, are managed and organised separately from the other activities of the insurer without possibility of transfer;
 - c) In terms of asset matching, either:
 - i. The future cash-flows of the assigned portfolio of assets replicate each of the future cash-flows of the portfolio of life annuity policies in the same currency (with any mismatch not giving rise to risks which are material); or
 - ii. The interest rate sensitivity of the portfolio of assets sufficiently matches the interest rate sensitivity of the portfolio of life annuity policies across the term structure of interest rates.
 - d) The life annuity policies do not give rise to future premium payments;
 - e) The only underwriting risks connected to the life annuity policies are longevity risk and/or expense risk, and include no options for the policyholder, or only a surrender option where the surrender value does not exceed the value of the assets covering the life annuity policies at the time the surrender option is exercised;
 - f) In the case of nominal life annuity policies, the cash-flows of the assigned portfolio of assets are fixed;¹³
 - g) In the case of inflation-linked life annuity policies, the cash-flows of the assigned portfolio of assets are inflation-linked;¹⁴ and
 - h) The cash-flows of the assets of the assigned portfolio of assets cannot be changed by the issuers of the assets or any third parties.
- 13.5. Notwithstanding section 13.4h) above, insurers may use assets where the cash-flows are fixed except for a dependence on inflation, provided that those assets replicate the cash-flows of the portfolio of insurance obligations that depend on inflation.

¹³ Arrangements where the insurer has an appropriate floating for fixed swap/hedging strategy in place can be considered to meet this condition.

¹⁴ Arrangements where the insurer has an appropriate floating for inflation-linked swap/hedging strategy in place can be considered to meet this condition.

- 13.6. In the event that issuers or third parties have the right to change the cash-flows of an asset in such a manner that the investor receives sufficient compensation to allow it to obtain the same cash-flows by re-investing in assets of an equivalent or better credit quality, the right to change the cash-flows shall not disqualify the asset for admissibility in accordance with section 13.4h) above.
- 13.7. Where an illiquidity premium is used, the difference between the following two rates must be calculated:
- a) The annual effective rate, calculated as a single discount rate, that equates the value of cash-flows of the assigned portfolio of assets to the market value of the assigned portfolio of assets; and
 - b) The annual effective rate, calculated as a single discount rate, that equates the value of the cash-flows of the portfolio of life annuity policies to the value of the best estimate of the portfolio of life annuity policies discounted using the risk-free interest rate term structure.
- 13.8. For each maturity, the illiquidity premium adjustment to be added to the risk free interest rate is 50% of the difference between the rates calculated in sections 13.7a) and 13.7b) above. The amount calculated is subject to a maximum of 50 basis points.
- 13.9. No illiquidity premium is allowed for in the discount rate used to value liabilities denominated in a foreign currency.

14. Risk Margin

General methodology for calculating the risk margin

- 14.1. The value of technical provisions must comprise of a best estimate and a risk margin. The risk margin is the part of the technical provisions that ensures that the value of the technical provisions is equivalent to the amount that another insurer would be expected to pay to take over and meet the insurance obligations of the insurer. The underlying transfer scenario that is associated with the takeover is set out in section 14.3 below.
- 14.2. The risk margin must be calculated by determining the cost of providing an amount of eligible own funds equal to the SCR necessary to support the insurance obligations over their contract boundary. The rate used in the determination of the cost of providing that amount of eligible own funds is referred to as the “cost-of-capital” rate.
- 14.3. The calculation of the risk margin must be based on the following transfer scenario:
- a) The whole portfolio of insurance obligations of the insurer that calculates the risk margin (“original insurer”) is taken over by another insurer (“reference insurer”);
 - b) The transfer of insurance obligations must include any reinsurance contracts and other risk mitigation instruments relating to these obligations;
 - c) The reference insurer does not have any insurance obligations and any eligible own funds before the transfer takes place;
 - d) After the transfer, the reference insurer raises eligible own funds equal to the SCR necessary to support the transferred insurance obligations over their lifetime;

- e) After the transfer, the reference insurer has assets to cover its SCR and the technical provisions, net of the amounts recoverable from eligible reinsurance contracts and other eligible risk mitigation instruments;
- f) The assets to cover the SCR are selected in such a way that minimises the SCR for market risk for the reference insurer;
- g) The SCR of the reference insurer captures underwriting risk with respect to the transferred business, any unavoidable market risk¹⁵ (where material), counterparty default risk with respect to Eligible Reinsurance contracts and other eligible risk mitigation instruments, and operational risk;
- h) The loss-absorbing capacity of technical provisions in the reference insurer corresponds to the loss-absorbing capacity of technical provisions in the original insurer;
- i) There is no loss-absorbing capacity of deferred taxes for the reference insurer; and
- j) The reference insurer adopts the same future management actions as the original insurer.

14.4. The calculation of the risk margin must be based on the assumption that the reference insurer will capitalise itself to the required level of eligible own funds at the time when the transfer takes place (denoted by $t = 0$ below). That is:

$$EOF_{RU}(0) = SCR_{RU}(0)$$

Where:

$EOF_{RU}(0)$ = The amount of eligible own funds raised by the reference insurer at the time the transfer takes place (i.e. $t = 0$)

$SCR_{RU}(0)$ = The SCR at $t = 0$ as calculated for the reference insurer

The cost of providing this amount of eligible own funds must be calculated by multiplying $EOF_{RU}(0)$ by the cost-of-capital rate. Sections 14.13 and 14.14 below set out details regarding the cost-of-capital rate.

14.5. The assessment referred to in section 14.4 must apply to the eligible own funds that the reference insurer is required to hold in all future periods.

14.6. The overall risk margin ($CoCM$) can then, in general terms, be calculated as:

$$CoCM = CoC \cdot \sum_{t \geq 0} \frac{EOF_{RU}(t)}{(1 + r_{t+1})^{t+1}} = CoC \cdot \sum_{t \geq 0} \frac{SCR_{RU}(t)}{(1 + r_{t+1})^{t+1}}$$

Where:

$EOF_{RU}(t)$ = The amount of eligible own funds for period t as calculated for the reference insurer

$SCR_{RU}(t)$ = The SCR at time t as calculated for the reference insurer

¹⁵ Participation Risk is considered to be a type of market risk.

r_t	=	The risk-free rate for time t
CoC	=	The cost-of-capital rate

This general method for calculating the risk margin applies regardless of whether the insurer's SCR calculation is based on the standardised formula or an internal model.

- 14.7. The risk-free rate (r_t) for discounting the SCRs for each future period t must not include an illiquidity premium, given that the reference insurer may not be able to earn the illiquidity premium under the conditions of the transfer scenario.
- 14.8. Insurers that calculate the SCR only with the standardised formula must calculate the relevant components of the risk margin (i.e. the $SCR_{RU}(t)$ factors) using the standardised formula. Insurers that calculate the SCR using an internal model (full or partial) should calculate those $SCR_{RU}(t)$ factors that are modelled internally using their approved internal model.
- 14.9. If the insurer calculates its SCR by using the standardised formula, all SCRs to be used in the risk margin calculation (i.e. all $SCR_{RU}(t)$ for $t \geq 0$) should, unless a simplified approach to the calculation of the risk margin is applied, be calculated as:¹⁶

$$SCR_{RU}(t) = BSCR_{RU}(t) + SCR_{RU,Op}(t) + SCR_{RU,Part}(t)$$

Where:

$BSCR_{RU}(t)$	=	The BSCR for period t as calculated for the reference insurer
$SCR_{RU,Op}(t)$	=	The SCR regarding operational risk for period t as calculated for the reference insurer
$SCR_{RU,Part}(t)$	=	The SCR regarding participation risk for period t as calculated for the reference insurer, which must equal the SCR regarding participation risk calculated for the original insurer for participations operating in the same sector as the insurer

- 14.10. In relation to the market risk component of the calculation, only the unavoidable market risk is required to be taken into account¹⁷, and only where this risk may be significant. Insurers are permitted to apply a practical approach to assess unavoidable market risk. For non-life insurance obligations, and short-term and mid-term life insurance obligations, the unavoidable market risk may be considered to be nil. For long-term life insurance obligations, there may be

¹⁶ Refer to section 14.18 for simplifications that may apply to the calculation of risk margins.

¹⁷ Unavoidable market risk may arise if there is an unavoidable mismatch between the cash-flows of the insurance liabilities and the financial instruments available to cover the liabilities. In particular, such a mismatch is unavoidable if the maturity of the available financial instruments is less than the maturity of the insurance liabilities. Refer to Guidance Note FSI GN 2.2 for further details regarding unavoidable market risk and possible simplifications to calculate this component of the risk margin.

unavoidable market risk (especially interest rate risk) and an assessment should be carried out to determine the potential significance of this risk.¹⁸

- 14.11. In relation to the default risk component of the calculation of the risk margin, only the risk for ceded reinsurance must be taken into account in the risk margin.
- 14.12. In relation to the non-life underwriting risk component of the calculation of the risk margin, no split of the risk margin is required in relation to premium provisions, provision for claims outstanding and other provisions.

The cost-of-capital rate

- 14.13. The cost-of-capital rate is the annual rate to be applied to the capital requirement in each period when determining the risk margin.
- 14.14. The cost-of-capital rate that must be used in the determination of the risk margin is 6%. This cost-of-capital rate has been calibrated as a long-term average rate, reflecting both periods of stability and periods of stress.

Level of granularity in the risk margin calculations

- 14.15. The risk margin must be calculated per (sub-)line of business. In order to undertake this calculation, the risk margin should first be calculated for the whole business of the insurer (allowing for diversification between (sub-)lines of business), then allocated to the (sub-)lines of business.
- 14.16. The risk margin per (sub-)line of business must take into account the diversification between (sub-)lines of business. That is, the sum of the risk margin per (sub-)line of business should equal the risk margin for the whole business. The allocation of the risk margin to the (sub-)lines of business must be consistent with the contribution of the (sub-)lines of business to the overall SCR during the lifetime of the business.
- 14.17. The contribution of a (sub-)line of business may be derived by calculating the SCR under the assumption that the insurer's other business does not exist. Where the relative sizes of the SCRs per (sub-)line of business do not materially change over the lifetime of the business, insurers may apply the following simplified approach for the allocation:

$$CoCM_{slb} = \frac{SCR_{RU,slb}(0)}{\sum_{slb} SCR_{RU,slb}(0)} \cdot CoCM$$

Where:

$CoCM_{slb}$	=	The risk margin allocated to (sub-)line of business slb
$SCR_{RU,slb}(0)$	=	The SCR of the reference insurer for (sub-)line of business slb at $t = 0$

¹⁸ The unavoidable interest rate risk is unlikely to be material if the duration of the insurer's whole portfolio is less than the duration of risk-free financial instruments available in financial markets. The assessment of whether the unavoidable market risk is significant should take into account that the risk will usually decrease over the lifetime of the portfolio.

$$CoCM = \text{The risk margin for the whole business of the insurer}$$

Where a (sub-)line of business consists of obligations where the technical provisions are calculated as a whole, a zero risk margin should be assigned to the (sub-)line of business.

Simplifications for the calculation of the risk margin

- 14.18. Insurers are permitted to apply a simplified method for calculating the risk margin, subject to the approach being proportionate to the nature, scale and complexity of the risks of the insurer's business (refer to section 17 for further details regarding the use of simplifications and the principle of proportionality when valuing technical provisions).
- 14.19. Insurers that use a simplified method may consider simplifications for the projections of the overall SCR, or for the projection of relevant risk categories or components of the SCR. Insurers may also consider the use of simplifications to calculate all future SCRs in one step.
- 14.20. Guidance Note FSI GN 2.2 sets out additional guidance on possible approaches to calculate the risk margin using a simplified method.

15. Calculating Technical Provisions as a Whole

- 15.1. Where future cash-flows associated with insurance obligations can be replicated reliably using financial instruments for which a reliable market value is observable, the value of technical provisions associated with those future cash-flows should be determined on the basis of the market value of those financial instruments. In such circumstances, a separate calculation of the best estimate and the risk margin is not required.
- 15.2. In determining whether future cash-flows associated with insurance obligations can be replicated reliably using financial instruments for which a reliable market value is observable, insurers must assess whether all the criteria set out in sections 15.5 to 15.7 below are met. If the criteria are met, the value of technical provisions associated with those future cash-flows should be set equal to the market value of the financial instruments used in the replication.
- 15.3. Where an insurance policy comprises of future cash-flows where some of the cash-flows meet the criteria in sections 15.5 to 15.7 below while others do not, the insurer must unbundle the two sets of cash-flows. For the set of cash-flows that satisfy the criteria, no separate calculation of the best estimate and the risk margin is required. A separate calculation for the set of cash-flows that do not satisfy the criteria, however, is required. If unbundling the cash-flow is not feasible, separate calculations of the best estimate and the risk margin must be required for the whole policy.
- 15.4. Guidance Note FSI GN 2.2 provides further guidance and examples of when technical provisions can be calculated as a whole.

Criteria for determining whether insurance obligations can be reliably replicated

- 15.5. The cash-flows of the financial instruments used in the replications should replicate the amount and timing of the cash-flows associated with the insurance obligations, taking into account the uncertainty related to the cash-flows

associated with the insurance obligations in all possible scenarios. That is, the cash-flows of the financial instruments must provide not only the same expected amount as the cash-flows associated with the insurance, but also the same patterns of variability.

- 15.6. In order to be used in the replications, the financial instruments must be traded in an active market. An active market is defined as one where transactions for the instrument take place with sufficient frequency and volume to provide pricing information on an ongoing basis.
- 15.7. The financial instruments used in the replications must also satisfy all of the following criteria:
 - a) A large number of financial instruments can be transacted without significantly affecting the price of the instruments used in the replications (deep market).
 - b) The financial instruments can be easily bought and sold without causing a significant movement in the price (liquid market).
 - c) Current trade and price information are normally readily available to the public, in particular to insurers (transparent market).

16. Taxation

- 16.1. The following sections of the Income Tax Act should form the basis of taxation for insurers:
 - a) Section 28 for non-life insurers; and
 - b) Section 29A for life insurers.
- 16.2. The I-E tax cash-flows allowed for in the technical provisions should be based on the tax the insurer expects to incur on assets backing the best estimate. In addition, the frictional costs associated with having to incur tax on assets required to back the non-hedgeable components of the SCR, over and above those required to back the technical provisions, should be allowed for. For financial soundness purposes, those frictional costs are captured implicitly through the allowance for double-taxation in the cost-of-capital rate used in the assessment of the risk margin.
- 16.3. Insurers whose liability on an adjusted tax basis exceeds the sum of the technical provisions and the non-hedgeable components of the SCR, should consider whether the frictional tax cost on assets backing this difference is material and make an appropriate allowance for this in the technical provisions. The adjusted tax basis used for the above assessment should be the prevailing tax basis, excluding all allowance for discretionary margins and including the zeroisation of negative Rand reserves.
- 16.4. Any deferred tax liabilities created by the difference in values calculated according to the prevailing tax basis and the basis under the Financial Soundness Standards for Insurers should be assumed to be available for loss-absorbing capacity.

17. Simplifications for Valuing Technical Provisions and the Principle of Proportionality

- 17.1. Simplifications that are applied by insurers to value technical provisions must be designed such that the resulting technical provisions are not less prudent than the value that would have been otherwise calculated.
- 17.2. Insurers must ensure that the actuarial and statistical techniques applied to value technical provisions are proportionate to the nature, scale and complexity of the underlying risks (i.e. the techniques adopted by insurers must meet the principle of proportionality).
- 17.3. The principle of proportionality allows insurers to choose and apply a valuation method which is:
 - a) Suitable to achieve the objective of deriving a market-consistent valuation according to the valuation principles set out in FSI 2 (Valuation of Assets, Liabilities and Eligible Own Funds); and
 - b) No more sophisticated than is required to achieve this objective.
- 17.4. In the event that several valuation methods can be regarded as proportionate, insurers must select and apply the method that is most appropriate in relation to the underlying risks.
- 17.5. Guidance Note FSI GN 2.2 provides further guidance regarding the principle of proportionality, including its application in the context of applying simplifications to value technical provisions. The Guidance Note also includes guidelines on possible simplified approaches when valuing various elements of the technical provisions for life and non-life insurance obligations, as well as reinsurance recoverables.

Disclosure

- 17.6. Where simplified approaches are applied in the valuation of technical provisions, the insurer's returns to the Prudential Authority should include instances and reasons for using such simplifications. Any additional risks introduced by using the simplification must be disclosed.

Attachment 1: Prescribed Lines and Sub-lines of Business

This Attachment sets out the lines and sub-lines of business that must be used for the purposes of segmenting insurance obligations when calculating technical provisions.

A. Life insurance and life reinsurance

- Life insurance and reinsurance obligations must be segmented into the following lines and sub-lines of business.¹⁹

	Level 1		Level 2		Level 3
1.	Risk	a.	Individual		Individual
		b.	Grouped Individual ²⁰		Grouped Individual
		c.	Group		Group
		d.	Credit Life – Individual		Credit Life – Individual
		e.	Credit Life – Grouped Individual		Credit Life – Grouped Individual
		f.	Credit Life – Group		Credit Life – Group
		g.	Funeral – Individual		Funeral – Individual
		h.	Funeral – Grouped Individual		Funeral – Grouped Individual
		i.	Funeral – Group		Funeral – Group
2.	Life Annuities	a.	Life Annuities	i.	Guaranteed (fully or partial)
				ii.	Market related
				iii.	With Discretionary Participation features
3.	Investments ²¹	a.	Individual Investment	i.	Guaranteed (fully or partial)
				ii.	Market related
				iii.	Linked
				iv.	With Discretionary Participation features
		b.	Fund Member Policies ²²	i.	Guaranteed (fully or partial)
				ii.	Market related
				iii.	Linked
				iv.	With Discretionary Participation features
		c.	Fund Investment	i.	Guaranteed (fully or partial)
				ii.	Market related
				iii.	Linked

¹⁹ In the table below, the lines of business are represented as “Level 1”, while the sub-lines of business are represented as “Level 2” and “Level 3”.

²⁰ “Grouped Individual” policies refer to an individual policy which is underwritten on a group basis.

²¹ Refer to section A.2 of this Attachment for the treatment of investment policies with more than one benefit type.

²² A “Fund Member policy” refers to an individual policy: i) of which a fund is the policyholder; ii) under which a specified member of the fund is the life insured; and iii) which is entered into by the fund exclusively for the purpose of funding that fund’s liability to the member as per the rules of that fund. This sub-line of business is for Fund Member policies that only have an investment component, and therefore should not be segmented into the “Combined Policies” line of business.

	Level 1		Level 2		Level 3
				iv.	With Discretionary Participation features
		d.	Income Drawdown	i.	Guaranteed (fully or partial)
				ii.	Market related
				iii.	Linked
				iv.	With Discretionary Participation features
4.	Combined Policies	a.	Universal Life ²³	i.	Risk
				ii.	Guaranteed (fully or partial)
				iii.	Market related
				iv.	Linked
				v.	With Discretionary Participation features
		b.	Fund Member Policies	i.	Risk
				ii.	Guaranteed (fully or partial)
				iii.	Market related
				iv.	Linked
				v.	With Discretionary Participation features
5.	Reinsurance	a.	Proportional Treaty	i.	Life and death – lump sum
				ii.	Health – lump sum
				iii.	Disability – lump sum
				iv.	Combined life and death, health and disability – lump sum
				v.	Health – recurring payment
				vi.	Disability – recurring payment
				vii.	Longevity
				viii.	Investment – Guaranteed (fully or partial)
				ix.	Investment – Market related
				x.	Investment – Linked
				xi.	Investment – With Discretionary Participation features
				xii.	Other
		b.	Non-Proportional Treaty	i.	Life and death – lump sum
				ii.	Health – lump sum
				iii.	Disability – lump sum
				iv.	Combined life and death, health and disability – lump sum
				v.	Health – recurring payment
				vi.	Disability – recurring payment
				vii.	Longevity

²³ “Universal Life” policies refer to policies (other than Fund Member policies) where insurance obligations constitute a combination of individual risk and individual investment obligations.

	Level 1		Level 2		Level 3
				viii.	Investment – Guaranteed (fully or partial)
				ix.	Investment – Market related
				x.	Investment – Linked
				xi.	Investment – With Discretionary Participation features
				xii.	Other
		c.	Facultative	i.	Life and death – lump sum
				ii.	Health – lump sum
				iii.	Disability – lump sum
				iv.	Combined life and death, health and disability – lump sum
				v.	Health – recurring payment
				vi.	Disability – recurring payment
				vii.	Longevity
				viii.	Investment – Guaranteed (fully or partial)
				ix.	Investment – Market related
				x.	Investment – Linked
				xi.	Investment – With Discretionary Participation features
				xii.	Other

2. For life investment policies, the following approach should be applied for the purpose of segmentation:
- Where the policy invests into different funds, the policy should be split for those different funds;
 - In the absence of different funds, the segmentation should be classified in the following manner:
 - If the policy/fund is linked, it should be classified as “Linked”;
 - If the policy/fund is not linked, and any part of the policy/fund has discretionary participation features, the whole policy/fund should be classified as “With Discretionary Participation features”;
 - If the policy/fund is not linked and does not contain any discretionary participation features, but contains investment guarantees, the policy/fund should be classified as “Guaranteed (fully or partial)”;
 - If none of the above applies, the policy/fund should be classified as “Market related”.

B. Non-life insurance and non-life reinsurance

- Non-life insurance and reinsurance obligations must be segmented into the following lines and sub-lines of business.²⁴

²⁴ In the table below, the lines of business are represented as “Level 1”, while the sub-lines of business (where applicable) are represented as “Level 2” and “Level 3”.

	Level 1		Level 2		Level 3
1.	Motor	a.	Personal lines		
		b.	Commercial lines		
2.	Property	a.	Personal lines		
		b.	Commercial lines		
3.	Agriculture	a.	Personal Lines	i.	Crop
				ii.	Equipment
				iii.	Other
		b.	Commercial Lines	i.	Crop
				ii.	Equipment
				iii.	Other
4.	Engineering			i.	Liability
				ii.	Other
5.	Marine	a.	Personal Lines	i.	Property
				ii.	Liability
		b.	Commercial Lines	i.	Property
				ii.	Liability
6.	Aviation	a.	Personal Lines	i.	Property
				ii.	Liability
		b.	Commercial Lines	i.	Property
				ii.	Liability
7.	Transport	a.	Personal Lines	i.	Property
				ii.	Liability
		b.	Commercial Lines	i.	Property
				ii.	Liability
8.	Rail			i.	Property
				ii.	Liability
9.	Legal Expense	a.	Personal lines		
		b.	Commercial lines		
10.	Liability			i.	Directors' and officers'
				ii.	Employers' liability
				iii.	Fidelity guarantee
				iv.	Product liability
				v.	Professional indemnity
				vi.	Public liability
				vii.	Other
11.	Consumer Credit	a.	Personal lines		
		b.	Commercial lines		
12.	Trade Credit				
13.	Guarantee	a.	Personal lines		
		b.	Commercial lines		
14.	Accident and Health	a.	Personal lines	i.	Individual
		b.	Commercial lines	i.	Individual
				ii.	Group
15.	Travel	a.	Personal lines	i.	Individual
		b.	Commercial lines	i.	Individual
				ii.	Group
16.	Miscellaneous	a.	Personal Lines	i.	Warranty
				ii.	Pet insurance
				iii.	Other
		b.	Commercial Lines		
17.	Terrorism			i.	Motor

	Level 1		Level 2		Level 3
				ii.	Property
				iii	Engineering
				iv.	Other
18.	Reinsurance ²⁵	a.	Proportional Treaty		
		b.	Non-Proportional Treaty		
		c.	Other insurance risk mitigation Treaty		
		d.	Proportional Facultative		
		e.	Non-Proportional Facultative		
		f.	Other insurance risk mitigation Facultative		

²⁵ Inwards reinsurance should be further segmented into each of the above lines and sub-lines of business based on the type of obligations being reinsured.

Attachment 2: Cash-flow Projections

This Attachment sets out further details on the types of cash in-flows and out-flows that must be considered as part of the cash-flow projections when valuing technical provisions.

A. Cash in-flows

1. Cash in-flows that must be included in the cash-flow projections include, where relevant:
 - a) Future premiums; and
 - b) Receivables for salvage and subrogation.
2. Cash in-flows must not include investment returns (e.g. interest earned, dividends).

B. Cash out-flows

1. Cash out-flows that must be included in the cash-flow projections include those related to benefits to policyholders or beneficiaries, expenses incurred in servicing insurance and reinsurance obligations, and other cash-flow items such as taxation payments which are charged to policyholders.

Benefit payments

2. Benefit payments that must be included in the cash-flow projections include, where relevant:
 - a) Claims payments;
 - b) Maturity benefits;
 - c) Death benefits;
 - d) Disability benefits;
 - e) Surrender benefits;
 - f) Annuity payments; and
 - g) Profit sharing bonuses.

Expenses

3. Expenses incurred in servicing obligations that must be included in the cash-flow projections include, where relevant:
 - a) Administrative expenses;
 - b) Investment management expenses;
 - c) Claims management expenses; and
 - d) Acquisition expenses including commissions which are expected to be incurred in the future.
4. Expenses must include both overhead expenses and expenses which are directly assignable to individual claims, policies or transactions.
5. The allocation of overhead expenses to (sub-)lines of business, homogeneous risk groups or other segments must be performed on an economic basis using realistic and objective principles.
6. For non-life insurance obligations, the insurer must allocate expenses between premium provisions and provisions for claims outstanding on an economic basis.

7. To the extent that future premiums from existing insurance policies are taken into account in the valuation of the best estimate, expenses related to those future premiums must be taken into consideration in the cash-flow projections.
8. Expense assumptions must include an allowance for expected future cost increases. The allowance for cost inflation must be consistent with the economic assumptions made in the cash-flow projections, and must take into account the types of cost involved. Where insurers make assumptions about expected cost reductions in their cash-flow projections, such assumptions must be supported by realistic and objective analysis, and based on verifiable data and information.
9. In assessing future expenses, insurers must take into account all expenses that are directly related to the ongoing administration of obligations related to existing insurance policies, together with a share of the relevant overhead expenses. The share of overheads must be assessed on the basis that the insurer continues to write new business in line with the insurer's business plan.
10. Further guidance regarding the different types of expenses and how the expenses should be apportioned can be found in Guidance Note FSI GN 2.2.

Taxation payments

11. In determining the best estimate, insurers must take into account taxation payments which are charged to policyholders. Only those taxation payments which are settled by the insurer, or which would be required to be made by the insurer to settle the insurance obligations, are required to be taken into account in the cash-flow projection.²⁶ A gross calculation of the amounts due to policyholders is sufficient where tax payments are settled by the policyholders.
12. Taxation payments that must be included in the valuation of the best estimate include, where relevant:
 - a) Transaction-based taxes (such as premium taxes, value added taxes, and goods and services taxes); and
 - b) Levies (such as fire service levies and guarantee fund assessments), which arise directly from existing insurance policies, or which can be attributed to insurance policies on a reasonable and consistent basis.

Contributions that are already included in an insurer's expense assumptions (e.g. levies paid by insurers to industry protection schemes) should not be included.

13. The allowance for tax payments in the best estimate must be consistent with the amount and timing of the taxable profits and losses that are expected to be incurred in the future.

²⁶ All other tax payments should be taken into account under other balance sheet items.

Attachment 3: Adjusting Recoverables for Counterparty Default Risk

This Attachment sets out further details of the requirements for adjusting recoverable amounts from eligible reinsurance contracts, other eligible risk mitigation instruments, and negative technical provisions arising from inwards reinsurance to account for expected losses due to counterparty default risk. As set out in section 12 of this Standard, this adjustment should be based on an assessment of the probability of default of the counterparty, and the average loss resulting from default (loss-given-default).

This Attachment also includes details of a simplified method for calculating the adjustment for expected losses due to counterparty default risk, and the circumstances when a simplified method may be applied.

A. Calculating the adjustment for expected loss due to counterparty default risk

1. The adjustment for counterparty default risk should approximate the losses given default of the counterparty, weighted with the probability of default of the counterparty.
2. The determination of the adjustment for counterparty default risk must take into account possible default events during the whole run-off period of the recoverables.
3. This calculation should be carried out separately by counterparty and each (sub-) line of business. For non-life insurance, the calculation must be carried out separately for premium provisions and provisions for claims outstanding.
4. In determining the parameters needed to undertake the calculation of the adjustment, the methods applied must provide reasonable assurance of market consistency.
5. The assessment of the probability of default and loss-given-default of the counterparty must be based on current, reliable and credible information. Possible sources of information that may be relied upon to verify the credibility of the parameters include credit spreads, rating judgements, information related to the supervisory solvency assessment, and the financial reports of the counterparty. Insurers must not rely on information provided by a third party without assessing that the information is current, reliable and credible.
6. Insurers may consider generally accepted and applied methods in financial markets for the purposes of calculating probability of default and loss-given-default parameters (e.g. analysis of credit default swap markets for implied default risk). The financial information used to undertake these assessments must also be sufficiently reliable and relevant.

Loss-given-default and recovery rates

7. The loss-given-default is the expected present value of the change in cash-flows underlying the recoverables resulting from a default of the counterparty at a certain point in time. Where the insurer has multiple exposures to the same counterparty, the loss-given-default should be assessed separately for each contract, unless the contracts include an explicit right of offset against other exposures to the counterparty or the exposures are immaterial.

8. A key input in determining the loss-given-default is the recovery rate, which reflects the share of the liabilities that the counterparty is still be able to honour in the case of default. In general terms, the loss-given-default can be estimated as the exposure-at-default multiplied by $(1-RR)$, where RR is the recovery rate of the counterparty.
9. If no reliable estimate of the recovery rate of a counterparty is available, a rate no higher than 50% should be used in calculating the adjustment for expected loss due to counterparty default risk.
10. An insurer's use of judgement to estimate the recovery rate should be limited, especially where there is little empirical data to make reliable estimates of the rate.
11. If the estimation of the recovery rate allows for the effect of collateral, letters of credit, or other instruments to mitigate loss-given-default, the credit risk of the instrument (and any other risk attached), and their correlation with the underlying recoverable, should be appropriately accounted for.

Probability of default

12. The probability of default reflects the likelihood of the counterparty defaulting within a specified time horizon.
13. If the run-off period of the recoverables is longer than one year, insurers should use a probability of default estimate that is based on the time horizon consistent with the run-off period. The cumulative probability of default will increase with the time horizon of the assessment.
14. If the run-off period of the recoverables is longer than one year, then it is not sufficient to multiply the expected loss in case of immediate default of the counterparty with the probability of default over the following year in order to determine the adjustment. Such an approach ignores the risk that the counterparty may – after surviving the first year – default at a later stage during the run-off of the recoverables.
15. Where possible in a reliable, objective and prudent manner, point-in-time estimates of the probability of default should be used for the calculation of the adjustment for expected loss due to counterparty default risk.²⁷ If point-in-time estimates are used, insurers should take into account the possible time-dependence of the probability of default.
16. If it is not possible to calculate point-in-time estimates in a reliable, objective and prudent manner, through-the-cycle estimates of the probability of default should be used. If through-the-cycle estimates are applied, insurers may assume that the probability of default does not change during the run-off of the recoverables.
17. In the case of reinsurance recoverables from SPVs, the probability of default should be calculated according to the average rating of assets held by the SPV, unless there is a reliable basis for an alternative calculation. In instances where the insurer has no reliable source to estimate the SPV's probability of default, the insurer should:

²⁷ Point-in-time estimates attempt to determine the current probability of default, while through-the-cycle estimates attempt to determine a long-term average of the probability of default.

- a) Calculate the probability of default according to the average rating of assets and derivatives held by the SPV in guarantee of the recoverable, if the SPV is authorised under South African regulations (or is recognised as equivalent to those authorised under South African regulations); or
- b) Consider the SPV to be unrated for all other SPVs.

B. Simplifications for adjusting recoverables for default risk

1. In instances where the counterparty is of good credit quality, the adjustment for counterparty default is likely to be small compared to the recoverable amount.
2. In cases where the adjustment for counterparty default risk is likely to be smaller than 5% of the best estimate of the recoverable amount (prior to any adjustment for expected loss due to counterparty default risk) and there are no indications that the simplification formula below leads to a significant underestimation, the following simplified method may be applied to calculate the adjustment:

$$Adj_{CD} = -\max\left((1 - RR) \cdot BE_{Rec} \cdot Dur_{mod} \cdot \frac{PD}{1 - PD}, 0\right)$$

Where:

Adj_{CD}	=	Adjustment for counterparty default risk
RR	=	Recovery rate of the counterparty
BE_{Rec}	=	Best estimate of recoverables not taking into account expected loss due to counterparty default risk
Dur_{mod}	=	Modified duration of the recoverables
PD	=	Probability of default of the counterparty under a one-year time horizon

3. Insurers may apply the following changes to the credit rating of the counterparty when determining the relevant RR and PD parameters and the adjustment for expected loss due to counterparty default risk under the simplified method:

Type of counterparty	Changes allowed to credit rating of counterparty
locally registered professional reinsurers	<ul style="list-style-type: none"> Counterparties that are locally registered professional reinsurers may be assigned a credit rating that disregards the effect of any sovereign cap applied for South Africa. Alternatively, if the counterparty has a parental guarantee in place that is legally enforceable in the parent's jurisdiction located in jurisdictions on the Prudential Authority's equivalence list, the parent's rating may be used instead. If the counterparty has a novation agreement in place with its parent located in jurisdictions on the Prudential Authority's equivalence list, the parent's rating may be used subject to approval by the Prudential Authority.
local direct insurers	<ul style="list-style-type: none"> Counterparties that are local direct insurers (conducting reinsurance) may be assigned a credit

Type of counterparty	Changes allowed to credit rating of counterparty
	rating that disregards the effect of any sovereign cap applied for South Africa.
branches of foreign reinsurers	<ul style="list-style-type: none"> Counterparties that are branches of foreign reinsurers located in jurisdictions on the Prudential Authority's equivalence list may be assigned a credit rating that is the same as the foreign reinsurer's. Recoverables from counterparties that are branches of foreign reinsurers located in jurisdictions that are not on the Prudential Authority's equivalence list must not be recognised.
Lloyd's	<ul style="list-style-type: none"> Counterparties that are part of Lloyd's (whether the reinsurance arrangement is placed through the representative office in South Africa or placed directly with the Lloyd's market) may be assigned the Lloyd's international rating.
foreign reinsurers (not authorised in South Africa)	<ul style="list-style-type: none"> Counterparties that are foreign reinsurers (not authorised by the Prudential Authority) located in jurisdictions on the Prudential Authority's equivalence list may be assigned their international rating. Recoverables from counterparties that are foreign reinsurers located in jurisdictions that are not on the Prudential Authority's equivalence list must not be recognised. Where a local insurer or reinsurer uses intra-group reinsurance to retrocede risk to a foreign parent based in a jurisdiction on the Prudential Authority's equivalence list, the credit rating of the parent may be used.

- For non-life insurers, premium provisions in relation to annual policies may be considered to have a duration equivalent to that of the provisions for claims outstanding during the past 12 months, plus one year.
- Insurers with insufficient resources to derive reliable estimates of the *RR* and *PD* parameters according to a market-consistent methodology should apply the default values when applying the simplified method as in the following table.

Credit quality step	Recovery rate	Probability of default	Adjustment of best estimate of recoverables from eligible reinsurance, other eligible risk mitigation instruments and negative technical provisions arising from inwards insurance, using the simplified method																			
			Expressed as a percentage of the best estimate																			
			1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years	20 years
1	50%	0.01%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%	0.03%	0.04%	0.04%	0.05%	0.05%	0.06%	0.06%	0.07%	0.07%	0.07%	0.08%	0.08%	0.09%	0.09%
2	45%	0.02%	0.01%	0.02%	0.03%	0.03%	0.04%	0.05%	0.06%	0.07%	0.07%	0.08%	0.09%	0.10%	0.10%	0.11%	0.12%	0.13%	0.13%	0.14%	0.15%	0.16%
3	45%	0.03%	0.02%	0.03%	0.04%	0.05%	0.06%	0.07%	0.08%	0.09%	0.10%	0.11%	0.12%	0.13%	0.14%	0.15%	0.16%	0.17%	0.18%	0.19%	0.20%	0.21%
4	45%	0.06%	0.03%	0.05%	0.06%	0.08%	0.09%	0.11%	0.13%	0.14%	0.16%	0.17%	0.19%	0.20%	0.22%	0.23%	0.25%	0.27%	0.28%	0.30%	0.31%	0.33%
5	40%	0.09%	0.05%	0.08%	0.10%	0.12%	0.14%	0.16%	0.19%	0.21%	0.23%	0.25%	0.27%	0.30%	0.32%	0.34%	0.36%	0.38%	0.41%	0.43%	0.45%	0.47%
6	40%	0.11%	0.07%	0.09%	0.12%	0.14%	0.17%	0.19%	0.22%	0.24%	0.27%	0.29%	0.32%	0.34%	0.37%	0.39%	0.42%	0.44%	0.47%	0.49%	0.52%	0.54%
7	40%	0.16%	0.10%	0.13%	0.16%	0.19%	0.22%	0.26%	0.29%	0.32%	0.35%	0.38%	0.42%	0.45%	0.48%	0.51%	0.54%	0.58%	0.61%	0.64%	0.67%	0.70%
8	35%	0.22%	0.14%	0.19%	0.23%	0.27%	0.31%	0.36%	0.40%	0.44%	0.48%	0.53%	0.57%	0.61%	0.65%	0.70%	0.74%	0.78%	0.82%	0.87%	0.91%	0.95%
9	35%	0.39%	0.25%	0.32%	0.38%	0.44%	0.50%	0.56%	0.62%	0.69%	0.75%	0.81%	0.87%	0.93%	0.99%	1.06%	1.12%	1.18%	1.24%	1.30%	1.36%	1.43%
10	35%	0.54%	0.35%	0.43%	0.50%	0.58%	0.66%	0.73%	0.81%	0.88%	0.96%	1.04%	1.11%	1.19%	1.26%	1.34%	1.42%	1.49%	1.57%	1.65%	1.72%	1.80%
11	20%	0.81%	0.65%	0.77%	0.89%	1.01%	1.13%	1.25%	1.38%	1.50%	1.62%	1.74%	1.86%	1.98%	2.10%	2.23%	2.35%	2.47%	2.59%	2.71%	2.83%	2.95%
12	20%	1.39%	1.11%	1.28%	1.45%	1.62%	1.79%	1.96%	2.13%	2.30%	2.47%	2.64%	2.81%	2.98%	3.15%	3.32%	3.49%	3.66%	3.83%	4.00%	4.17%	4.34%
13	20%	2.50%	2.00%	2.24%	2.49%	2.73%	2.97%	3.22%	3.46%	3.70%	3.94%	4.19%	4.43%	4.67%	4.92%	5.16%	5.40%	5.65%	5.89%	N/A	N/A	N/A
14	10%	5.37%	4.83%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15+	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Attachment 4: Deriving the Risk-free Interest Rate Term Structure for Foreign Currencies

For cash-flows denominated in foreign currencies where the risk-free interest rate term structure has not been published by the Prudential Authority, the insurer must determine the relevant risk-free interest rate term structure according to the requirements in this Attachment.

A. Calculation of the non-extrapolated part of the curve, prior to adjustment

1. Interest rates where extrapolation for the relevant term is not required must be based on data observed in financial markets and the following principles:
 - a) The relevant risk-free interest rate term structure should be determined on the basis of market data which is relevant for the valuation date.
 - b) The relevant risk-free interest rate term structure should meet the following “risk-free rate criteria”:
 - i. No credit risk: The rates should be free of credit risk. As a starting position, government bond rates in the relevant currency should be used as the risk-free interest rates. If government bond rates do not meet the risk-free rate criteria, then the insurer may use data based on swap curves in the relevant currency.
 - ii. Realism: It should be possible for all insurers to earn the rates in practice in a risk-free manner.
 - iii. Reliability: The data and the method chosen to determine the term structure should be robust. It should result in a reliable and accurate estimate.
 - iv. High liquidity: The rates should be based on financial instruments for which a reliable market value is observable (i.e. traded in deep, liquid and transparent markets).
 - v. No technical bias: Supply and demand distortions should be filtered in the determination of the relevant discount rates for the cash-flows considered in the calculation of technical provisions.

B. Adjustment of the non-extrapolated part of the curve

1. If the interest rate term structure derived is not credit risk-free or includes some technical bias, insurers may adjust the rates to satisfy the risk-free rate criteria.
2. In cases where the insurer lacks a sufficient basis to robustly assess the magnitude of the adjustment, the following approach must be used:
 - a) The adjustment should be quantified by using the adjustment applied for the interest rate term structure relevant for South African Rand, multiplied by the proportion which the interest rates in the relevant currency bear to the Rand;
 - b) To calculate this proportion, the longest term available which meets the requirements set out in section A1b) above for the relevant currency must be used; and
 - c) The proportion must not be set to a value that is lower than 1.

C. Extrapolation of the interest rate term structure

1. For most term structures, there is sufficient liquidity up to a certain maturity. Beyond this point the term structure needs to be extrapolated when necessary.

2. The following principles must be applied when extrapolating interest rates for longer-dated maturities not captured by the steps above:
 - a) For each currency, the extrapolated part of the risk-free interest rate term structure should be based on forward rates converging smoothly from one, or a set of, data points in relation to the longest maturities observed in a liquid market to an unconditional ultimate long-term forward rate;
 - b) The principles applied when extrapolating the risk-free interest rate term structure should be the same for all currencies, in particular with respect to the determination of the data points for the longest maturities observed in a liquid market and the mechanism to ensure a smooth convergence to the unconditional long-term forward rate; and
 - c) For each relevant currency, the ultimate long-term forward rate should be stable over time and only change due to fundamental changes in long-term expectations. The principles used to determine the macro-economic long-term forward rate should be made explicit by the insurer.