ISLE OF MAN
FINANCIAL SERVICES AUTHORITY

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TECHNICAL SPECIFICATION FOR QIS4 FOR LONG TERM INSURERS

TECHNICAL SPECIFICATION

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This paper is issued by the Financial Service Authority ("the FSA"), the regulatory authority responsible for the supervision of the financial services, insurance and pensions sectors in the Isle of Man.

What is it for?

This paper sets out the technical specification for our fourth Quantitative Impact Study (QIS4) in respect of the valuation of the assets and liabilities and the assessment of capital adequacy of insurers undertaking long term insurance business. The intention is for this to be the final Quantitative Impact Study for long term insurance business, however the resulting regulations may be revised based on the results of QIS4. This technical specification is therefore the FSA's proposed specification for its new valuation and capital adequacy regime and will be used as the basis to draft the regulations.

Who is affected by it?

This document will be of direct interest to those with responsibility for modelling, calculating, and reviewing and/or using the calculation of technical provisions and assessing risk and capital adequacy for all existing and prospective insurance companies undertaking long term insurance business in or from the Isle of Man.

Other parties with an interest in the Isle of Man life assurance sector may also find this specification and the issues raised of interest.

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1.1. Assets and other Liabilities

1.1.1. Valuation Approach

1.1.1.1. The primary objective for valuation under the FSA's proposed regulatory framework requires an economic, market-consistent approach to the valuation of both assets and liabilities. According to the risk-based approach underlying the FSA's proposed approach to the evaluation of solvency, when valuing balance sheet items on an economic basis, insurers need to consider the risks that arise from a particular balance sheet item, using principles, methodologies and parameters that the financial markets would expect to be used in valuing the asset or liability.

1.1.1.2. Wherever possible, a market-consistent valuation should be used for the economic valuation of assets and liabilities. A valuation that is based upon principles, methodologies and parameters that the financial markets would expect to be used is termed a market-consistent valuation. Where a range of assessments and approaches is evident from a market, a market-consistent valuation is one that falls within this range.

1.1.1.3. It may be well known to financial markets that the approach taken to market assessments for some assets and insurance liabilities or their components uses modelling based on certain assumptions, techniques and portfolio specific information as well as generally available data on insurance technical risks. A calculation consistent with this approach would be market-consistent.

1.1.1.4. However, in exceptional circumstances, there may be information additional to that on market assessments from the wider economy that should be taken into account e.g. where a market is anomalous, not operating effectively or is subject to intervention from the relevant authorities. For example, where a government/regulator intervenes in a major way e.g. by injecting money or taking control. Such action may be in response to or the cause of distortions of supply and demand in relevant markets so that values determined in a market-consistent way may also be distorted temporarily. In addition, alternative approaches will be needed in the case of assets, or liabilities which are determined by reference to such assets (as may the case for personal portfolio bonds for example), which are not frequently traded.

1.1.1.5. A market-consistent value may not then be appropriate and a different value, which may, for example, be expected to be market-consistent under more normal market conditions, may need to be determined to arrive at an economic valuation for solvency purposes. The extent to which this is appropriate is likely to vary according to market conditions. If such circumstances arise, we would provide guidance as to the appropriate values or adjustments insurers should use for solvency purposes to reflect the risk-adjusted present value of their cash flows and maintain consistency, decision usefulness, relevance and transparency.

1.1.1.6. A sufficiently active market may exist for an asset or liability that in itself provides a measure of value that is market-consistent. For other assets and liabilities or when the market becomes illiquid, there may be no direct measure of value. However, relevant market information may be available regarding the assessment of components of the rights, obligations or risks of the asset or liability. If, for example, a component of the obligations of an insurance liability can be replicated using financial instruments for which there is a reliable market value, that value provides a reliable indication of the value for this component.

1.1.1.7. The market-consistent value of an asset or liability may be determined using different techniques, or a combination thereof. For example, in valuing technical provisions:

- If the insurance obligations are traded in a sufficiently deep and liquid market, the observed prices may be used to arrive at a market-consistent value. The availability, decision usefulness and reliability of the prices should be taken into account when deriving the market-consistent value;
- If some or all of the cash flows associated with the insurance obligations can be replicated using financial instruments, the market value of the replicating financial instruments may be used as the value of those cash flows;
- If the cash flows associated with the insurance obligations cannot be replicated perfectly, then the remaining cash flows may be valued using a discounted cash flow model. To be market-consistent, the methodology used needs to deliver a proxy for market value based on market-consistent valuation principles and to reflect the uncertainty or unavailability of market information.

1.1.1.8. This approach to valuation is sometimes termed the “components approach”, under which risk components are valued at market value where such a value is ascertainable, decision useful and reliable; other components may need to be valued using marked-to-model methods. Separate components may, for example, be identifiable for insurance contracts which have an investment or deposit component and an insurance risk component. The components approach helps to improve market consistency and reduce modelling error. It should be noted that where there is no sufficiently deep and liquid market from which to determine a market-consistent value for a risk component, the additional liquidity risk needs to be considered.

1.1.1.9. Where liabilities are illiquid, in that they cannot be surrendered by the policyholder (such as in the case of immediate annuities) and are closely matched by suitable assets, adjustments may be applied to the market-consistent approach, to reduce or smooth out some aspects of possible mismatches in the valuation approach between assets and liabilities. Details of this approach, whereby the valuation of the matched assets may be marked to model rather than to market, are set out in Section 2.12.

1.1.1.10. To achieve consistent and reliable economic values of insurance portfolios for solvency purposes, the value of technical provisions should not reflect an insurer’s own credit standing.

1.1.1.11. However, the credit standing of a reinsurer should be taken into account when considering the solvency of a ceding (re)insurer even if the contractual cash flows are the same. The expected level of reinsurer default should be allowed for in valuing the reinsurance asset.

1.1.2. Specific recognition and valuation requirements for selected items on the regulatory balance sheet

1.1.2.1. **Intangible assets**. Goodwill is to be valued at zero. Other intangible assets can be recognised and measured at a value other than zero only if they can be sold separately and if there is a quoted market price in an active market for the same or similar intangible assets.

1.1.2.2. **Participations**. Holdings in related entities are to be valued at the quoted market price in an active market. If this valuation is not possible:

1) **Holdings in related insurers and reinsurers:**

a) Subsidiary insurers or reinsurers must be valued using the equity method based on recognition and measurement for the subsidiary's balance sheet consistent with the requirements of this technical specification.

b) Related insurers or reinsurers other than subsidiaries should also be valued using the equity method using recognition and measurement of the holding's balance sheet consistent with the requirements of this technical specification. However if this is not possible an alternative valuation method in accordance with the requirements in 1.1.1 should be used.

2) **Holdings in entities other than insurers and reinsurers:**

a) Holdings in entities other than insurers and reinsurers should be valued using the equity method based on recognition and measurement of the related entity's balance sheet consistent with the requirements of this technical specification. If that is not practicable the equity method would be applied to the entity's balance sheet following IFRS with the amendment that goodwill and other intangible assets would need to be deducted. If this is not possible for related entities, other than subsidiaries, an alternative valuation method in accordance with the requirements in 1.1.1 should be used.

1.1.2.3. **Contingent liabilities**. For regulatory solvency purposes, material contingent liabilities must be valued as liabilities. The valuation of the liability should follow the recognition and measurement requirements of FRS12 on “Provisions, Contingent Liabilities and Contingent Assets” however with the use of the risk-free interest rate term structure as set out in 1.2.5.

1.1.2.4. **Deferred taxes**. Insurers and reinsurers shall recognise and value deferred tax assets and liabilities in relation to all assets and liabilities that are recognised for solvency or tax purposes in accordance with IFRS. Notwithstanding this, (re)insurers shall value deferred taxes, other than deferred tax assets arising from the carry forward of unused tax credits and the carry forward of unused tax losses, on the basis of the difference between the value ascribed to assets and liabilities recognised and valued according to this technical specification, and the values ascribed to assets and liabilities as recognised and valued for tax purposes. (Re)insurers should only ascribe a positive value to deferred tax assets where it is probable that future taxable profit will be available against which the deferred tax asset can be utilised, taking into account any legal or regulatory requirements on the time limits relating to the carry forward of unused tax losses or the carry forward of unused tax credits.

1.2. Technical Provisions

1.2.1. Introduction

1.2.1.1. The FSA's proposed regulatory regime requires insurers to set up technical provisions which correspond to the economic value of the entity fulfilling its insurance obligations to policyholders and other beneficiaries arising over the lifetime of the entity's portfolio of insurance policies. The value of technical provisions should be equal to the sum of a best estimate provision (see 1.2.3) and a risk margin (see Section 1.2.4).

1.2.1.2. Insurers should segment their (re)insurance obligations into homogeneous risk groups, and as a minimum by line of business, when calculating technical provisions. Section 1.2.2 specifies the segmentation of the obligations requested for QIS4.

1.2.1.3. The best estimate provision should be calculated gross, without deduction of the amounts recoverable from reinsurance contracts and SPVs. Those amounts should be calculated separately. The valuation of recoverables is set out in paragraphs 1.2.3.119 to 1.2.3.152.

1.2.1.4. The calculation of the technical provisions should take account of the time value of money by using the relevant risk-free interest rate term structure which is specified in Section 1.2.5.

1.2.1.5. The FSA considers it important that the revised valuation and solvency capital adequacy assessment regime is proportionate to the characteristics of the Isle of Man's insurance industry and this will be a key aspect of developing the regime in consultation with industry. The actuarial and statistical methods used to calculate technical provisions should be proportionate to the nature, scale and complexity of the risks supported by the insurer. Guidance on the application of the proportionality principle and the specification of simplified methods can be found in Section 1.2.6. Possible simplified methods for the calculation of the risk margin are included in Sections 1.2.4.24 to 1.2.4.48.

1.2.2. Segmentation

General Principles

1.2.2.1. Insurance and reinsurance obligations should be segmented, as a minimum, by line of business (LoB) in order to calculate technical provisions.

1.2.2.2. The purpose of segmentation of (re)insurance obligations is to achieve an accurate valuation of technical provisions. For example, in order to ensure that appropriate assumptions are used, it is important that the assumptions are based on homogeneous data to avoid introducing distortions which might arise from combining dissimilar business. Therefore, business is often managed in more granular homogeneous risk groups than the proposed minimum segmentation by lines of business where it allows for a more accurate valuation of technical provisions.

1.2.2.3. Insurers offer insurance products covering different sets of risks. Therefore it is appropriate for each insurer to define the homogeneous risk group and the level of granularity most appropriate for their business and in the manner needed to derive appropriate assumptions for the calculation of the best estimate provision.

1.2.2.4. (Re)insurance obligations should be allocated to the line of business that best reflects the nature of the risks relating to the obligation. In particular, the principle of substance over form should be followed for the allocation. In other words, the segmentation should reflect the nature of the risks underlying the contract (substance), rather than the legal form of the contract (form).

1.2.2.5. The segmentation should be applied to both components of the technical provisions (best estimate provision and risk margin).

Segmentation of life insurance and reinsurance obligations

1.2.2.6. Life insurance obligations should be segmented into four lines of business:

1) **Unit-linked, investment-linked and index-linked insurance**

   Insurance obligations with unit-linked, investment-linked and index-linked benefits.

2) **Life insurance with profit participation**

   Insurance obligations with profit participation.

3) **Health Insurance**

   Health insurance obligations where the underlying business is pursued on a similar technical basis to that of life insurance. For QIS4 any health insurance obligations where the underlying business is not pursued on a similar technical basis to life insurance should also be included in this line of business.

4) **Other life insurance**

   Obligations other than obligations included in any of the other life lines of business.

1.2.2.7. Obligations relating to accepted reinsurance in life should be segmented into the same four lines of business as above, as classes 5-8.

1.2.2.8. There could be circumstances where, for a particular line of business in the segment 'life insurance with profit participation' (participating business), the insurance liabilities cannot, from the outset, be calculated in isolation from those of the rest of the business. For example, an insurer may have management rules such that another line of business can be reduced to recoup guaranteed costs on another line of business and/or where bonus rates depend on the overall solvency position of the insurer. However, even in this case insurers should assign a technical provision to each line of business in a practicable manner.

1.2.3. Best estimate provision (BEP)

Methodology for the calculation of the BEP

Appropriate methodologies for the calculation of the BEP

1.2.3.1. The BEP should correspond to the probability-weighted average of future cash flows taking account of the time value of money.

1.2.3.2. Therefore, the BEP calculation should allow for the uncertainty in the future cash flows. The calculation should consider the variability of the cash flows in order to ensure that the BEP represents the mean of the distribution of cash flow values. Allowance for uncertainty does not suggest that additional margins should be included within the BEP.

1.2.3.3. The BEP is the average of the outcomes of all possible scenarios, weighted according to their respective probabilities. Although, in principle, all possible scenarios should be considered, it may not be necessary, or even possible, to explicitly incorporate all possible scenarios in the valuation of the liability, nor to develop explicit probability distributions in all cases, depending on the type of risks involved and the materiality of the expected financial effect of the scenarios under consideration. Moreover, it is sometimes possible to implicitly allow for all possible scenarios, for example, in closed form solutions in life insurance.

1.2.3.4. Cash flow characteristics that should, in principle and where relevant, be taken into consideration in the application of the valuation technique include the following:

1) Uncertainty in the amount of expenses;
2) Uncertainty in policyholder behaviour;
3) Uncertainty in the timing, frequency and severity of claim events;
4) Uncertainty in claims amounts, including uncertainty in claims inflation, and in the period needed to settle and pay claims;
5) Uncertainty in the expected future developments that will have a material impact on the cash in- and out-flows required to settle the insurance and reinsurance obligations thereof (e.g. the value of an index/market values used to determine claim amounts). For this purpose future developments shall include demographic, legal, medical, technological, social, environmental and economic developments including inflation;

6) 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.

   A cash flow having no path dependency can be valued by, for example, using an assumed value of the equity market at a future point in time (and a consistent discount rate to produce a market-consistent value). However, a cash flow with path dependency would need additional assumptions as to how the level of the equity market evolved (the equity market's path) over time in order to be valued;

7) Interdependency between two or more causes of uncertainty.

   Some risk-drivers may be heavily influenced by, or even determined by, several other risk-drivers (interdependence). For example, a fall in market values may influence the value of a maturity guarantee, which in turn affects policyholder behaviour. Another example would be a change in a legal, tax or regulatory environment or the onset of a recession which could increase surrenders, complaints or fines.

1.2.3.5. Insurers should use actuarial and statistical techniques for the calculation of the BEP which appropriately reflect the risks that affect the cash flows. These may include simulation methods, deterministic techniques and analytical techniques.

1.2.3.6. For certain life insurance liabilities, in particular the future discretionary benefits relating to participating contracts or other contracts with embedded options and guarantees, simulation may lead to a more appropriate and robust valuation of the BEP.

Cash flow projections

1.2.3.7. The BEP should be calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. Recoverables from reinsurance and special purpose vehicles should be calculated separately. In the case of co-insurance, the cash flows of each co-insurer should be calculated as their proportion of the expected cash flows without deduction of the amounts recoverable from reinsurance and special purpose vehicles.

1.2.3.8. Cash flow projections should reflect expected realistic future demographic, legal, medical, technological, social or economic developments over the lifetime of the insurance and reinsurance obligations.

1.2.3.9. Appropriate assumptions for future inflation should be built into the cash flow projection. Care should be taken to identify the type of inflation to which particular cash flows are exposed (e.g. consumer price index, salary inflation).

Recognition and derecognition of (re)insurance contracts for solvency purposes

1.2.3.10. For the avoidance of doubt, all contracts written by authorised insurers or permitted insurers within the definition of 'long term business' as currently defined by Regulation 3 of the Insurance Regulations 1986 are insurance contracts for the purposes of this document.

1.2.3.11. The calculation of the BEP should only include future cash flows associated with obligations within the boundary of the contract. No future business should be taken into account for the calculation of technical provisions.

1.2.3.12. A reinsurance or insurance obligation should be initially recognised by insurers at a date determined by reference to the earlier of:

1) The date the insurer becomes a party to the binding contract that gives rise to the obligation; and
2) The inception date of the contract.

1.2.3.13. A contract should be derecognised as an existing contract only when the obligation specified in the contract is extinguished, discharged, cancelled or expires.

The boundary of an existing (re)insurance contract

1.2.3.14. Insurers should ensure that the principles laid down in the following paragraphs for determining the contract boundaries are consistently applied to all insurance and reinsurance contracts, in particular, over time.

1.2.3.15. All obligations relating to the contract, including obligations relating to unilateral rights of the insurer to renew or extend the scope of the contract and obligations that relate to paid premiums, should belong to the contract unless otherwise stated in the following paragraphs.

1.2.3.16. Any obligations which relate to insurance or reinsurance cover which might be provided by the insurer after any of the following dates do not belong to the contract, unless the insurer can compel the policyholder to pay the premium for those obligations:

1) The future date where the insurer has a unilateral right to terminate the contract;
2) The future date where the insurer has a unilateral right to reject premiums payable under the contract (except that obligations in respect of premiums already paid prior to that date should continue); or
3) The future date where the insurer has a unilateral right to amend the premiums or the benefits payable under the contract in such a way that the premiums fully reflect the risks.

1.2.3.17. For the avoidance of doubt, future premiums from non-contractual increases or top-ups, or indexation of premiums are to be allowed in technical provisions only in cases where the insurer is restricted as to the extent to which the charges to be applied to the new premiums can be varied. Similarly, contracts should be assumed to continue after their original terms, only in cases where the insurer is restricted as to the extent to which the charges to be applied during the new extended coverage period can be varied by the company at the point of extension and thereafter. In both cases, the likelihood of policyholders paying extra premiums or extending the term of the contract shall be based on suitable data or experience and subject to the relevant stress scenarios.

1.2.3.18. Where an insurer has a unilateral right to amend, at a future date, the premiums or benefits of a portfolio of insurance or reinsurance obligations in such a way that the premiums of the portfolio fully reflect the risks covered by the portfolio, the insurer's unilateral right to amend the premiums or benefits of those obligations shall fall under point 3). For the purpose of this paragraph, a 'portfolio of insurance or reinsurance obligations' means a set of obligations for which the insurer can amend premiums and benefits under similar circumstances and with similar consequences.

1.2.3.19. Notwithstanding 1.2.3.17, in the case of life insurance obligations where an individual risk assessment of the obligations relating to the insured person of the contract is carried out at the inception of the contract and that assessment cannot be repeated before amending the premiums or benefits, insurers and reinsurers shall assess at the level of the contract whether the premiums fully reflect the risk for the purposes of point 3). For the purpose of this paragraph, an 'individual risk assessment' means any individual assessment of relevant features of the insured person that allow the insurer or reinsurer to gather sufficient information in order to form an appropriate understanding of the risks associated with that insured person. In the case of contracts covering mortality risks or health risks similar to life insurance techniques, the individual risk assessment can be a self-assessment by the insured person or can include a medical examination or survey.

1.2.3.20. For the purpose of 1.2.3.16 1) to 3), insurers and reinsurers should consider the right to terminate, reject premiums, or amend the premiums or benefits payable under the contract, as being unilateral, when neither the policyholder nor any third party can restrict the exercise of that right. For the purpose of this paragraph, third parties do not include supervisory authorities. In particular:

1) Where, in order to get the amendment of premiums and benefits into effect, the insurer or reinsurer is required to obtain an external assessment in accordance with the law or the terms or conditions of another agreement outside the insurance contract, the existence of such a requirement should limit the unilateral right of the insurer or reinsurer only if the assessment gives the policy holder or any third party the right to interfere with the use of that right.
2) Insurers and reinsurers should not consider reputational risk or competitive pressures as limitations of the unilateral right.
3) Insurers and reinsurers should consider that Manx or other national laws or regulations limit their unilateral right only if these laws or regulations restrict, or give the policyholder or any third party the right to restrict, the exercise of that right. Note that it is the FSA's view that regulations such as the obligation to treat policyholders fairly are likely to restrict the exercise of this right in certain circumstances.

1.2.3.21. Insurers should disregard the right to unilaterally amend premiums or the benefits payable under the contract if the premiums or benefits payable depend solely on the decisions of the policy holder or the beneficiary.

1.2.3.22. Insurers should however ignore restrictions of the unilateral right and limitations of the extent by which premiums and benefits can be amended that have no discernible effect on the economics of the contract.

1.2.3.23. Some premium or benefit changes agreed upon at inception of the contract may depend on factors beyond the control of the insurer or reinsurer (e.g. inflation, increase of salary). Such a change should not be considered an amendment in terms of contract boundaries provided that the same premium structure as agreed at the inception of the policy is used. For example, lapses of such policies should be considered as being policyholder behaviour in accordance with 1.2.3.102 to 1.2.3.108.

1.2.3.24. Where the insurer has a unilateral right as referred to in paragraph 1.2.3.16 that relates only to a part of the contract, the same principles as defined in paragraph 1.2.3.16 shall be applied to this part.

1.2.3.25. Notwithstanding paragraphs 1.2.3.16 to 1.2.3.23, any obligations that do not relate to premiums which have already been paid do not belong to an insurance or reinsurance contract (unless the insurer can compel the policyholder to pay the future premium) where the contract:

1) Does not provide compensation for a specified uncertain event that adversely affects the insured person;
2) Does not include a financial guarantee of benefits;
3) Allows the insurer the unilateral right to amend the future premiums or the benefits associated with such premiums in such a way that these premiums fully reflect the risks associated with the premiums.

1.2.3.26. For the purpose of points 1) and 2), insurers should ignore coverage of events and guarantees that have no discernible effect on the economics of the contract.

1.2.3.27. When determining whether the insurance coverage of an event or a financial guarantee has no discernible effect on the economics of a contract as referred to in paragraph 1.2.3.25, insurers should take into account all potential future cash flows which may arise from the contract.

1.2.3.28. Insurers should consider the cover of a specified uncertain event that adversely affects the insured person as having a discernible effect on the economics of the contract when the cover provides a discernible financial advantage to the beneficiary. It is the FSA's view that contracts providing a death benefit of 101% of the unit or surrender value do meet this criterion. Additionally, contracts that provide a death benefit of the fund value plus a specific monetary value e.g. £100 may be considered as having a discernible financial effect. This would however, depend on the size of the contract. We request that insurers check with the FSA before assuming that death benefits which are less than 1% of the unit value or premium are discernible.

1.2.3.29. Insurers should consider a financial guarantee of benefits as having a discernible effect on the economics of a contract if and only if the financial guarantee is linked to the payment of the future premiums and provides the policyholder with a discernible financial advantage in at least one scenario with commercial substance. It is the FSA's view that contracts providing a guarantee of a return of premiums paid on maturity or death (or a multiple of such premiums) does meet this criterion.

1.2.3.30. Insurers should regard premiums to fully reflect the risks covered by a portfolio of insurance or reinsurance obligations in accordance with 1.2.3.16 3), only where there is no scenario under which the amount of the benefits and expenses payable under the portfolio exceeds the amount of the premiums payable under the portfolio. For the purpose of this assessment, insurers should verify whether at the moment at which either premiums or benefits can be amended, there is no circumstance when the insurer does not have the right to amend premiums or benefits such that the expected present value of the premiums exceeds the expected present value of benefits and expenses payable under the portfolio.

1.2.3.31. For the purpose of paragraphs 1.2.3.16 and 1.2.3.25, insurers shall recognise their ability to compel a policy holder to pay a premium only if the policyholder's payment is legally enforceable. For instance, the holding by the insurer of the Bank Identifier Code or credit card details of policyholders or of a direct debit mandate, shall not be characterised as a means for insurers to compel policyholders to pay the premiums in particular for contracts with scheduled future premiums.

1.2.3.32. (Re)insurers should, for any accepted reinsurance contracts, apply the specifications stated above independently from the boundaries of the underlying insurance or reinsurance contracts to which they relate. The boundary of a reinsurance contract may hence be different in the economic balance sheet of the buyer of the reinsurance when compared to the economic balance sheet of the seller of the reinsurance.

Time Horizon

1.2.3.33. The projection horizon used in the calculation of the BEP should cover the full lifetime of all the cash in- and out-flows required to settle the obligations related to existing insurance and reinsurance contracts on the date of the valuation, unless an accurate valuation can be achieved otherwise.

1.2.3.34. The determination of the lifetime of insurance and reinsurance obligations should be based on up-to-date, credible information and realistic assumptions about when the existing insurance and reinsurance obligations will be discharged or cancelled or expired.

Gross cash in-flows

1.2.3.35. To determine the BEP, the following non-exhaustive list of cash in-flows should be included:

1) Future premiums;

2) Rebates received;

3) Commission claw-back;
4) Reinsurance commissions.

1.2.3.36. The cash in-flows should not take into account investment returns (i.e. interests earned, dividends…).

1.2.3.37. Insurers and reinsurers should establish the future premium cash flows contained within the contract boundaries at the valuation date and include within the calculation of its best estimate those future premium cash flows which fall due after the valuation date.

1.2.3.38. Insurers and reinsurers should treat premiums which are due for payment by the valuation date as a premium receivable on its balance sheet until the cash is received.

Gross cash out-flows

1.2.3.39. The cash out may include benefits to the policyholders or beneficiaries, expenses that will be incurred in servicing insurance and reinsurance obligations, *and any other cash flow items such as:*

1) Payment between the insurer or reinsurer and intermediaries related to insurance or reinsurance obligations;
2) Payments between the insurer or reinsurer and investment firms in relation to contracts with index-linked and unit-linked benefits;
3) Taxation payments which are, or are expected to be, charged to policyholders or are required to settle the insurance or reinsurance obligations.

Benefits

1.2.3.40. The benefit cash out-flows (non-exhaustive list) should include:

1) Claims payments;
2) Maturity payments;
3) Death benefits;
4) Disability benefits;
5) Surrender benefits;
6) Annuity payments;
7) Profit sharing bonuses.

Expenses

1.2.3.41. In determining the BEP, the insurer should take into account all cash flows arising from expenses that will be incurred in servicing all recognised insurance and reinsurance obligations over the lifetime thereof. This should include, inter alia:

1) Administrative expenses;
2) Investment management expenses;
3) Claims management expenses/handling expenses;
4) Acquisition expenses;
5) Overhead expenses included in the expenses mentioned above.

1.2.3.42. Expenses shall be projected on the assumption that the insurer will write new business in the future (assuming that it currently does so).

1.2.3.43. Expenses that are pertinent to the valuation of technical provisions would usually include both allocated and overhead expenses. Allocated expenses are those expenses which could be directly assignable to a source of expense that is directly involved in servicing insurance and reinsurance obligations. Overhead expenses comprise all other expenses which the insurer incurs while servicing insurance and reinsurance obligations.

1.2.3.44. Overhead expenses include, for example, expenses which are related to general management and service departments which are not directly involved in new business or policy maintenance activities and which are relatively insensitive to either the volume of new business or the level of in-force business. They include salaries of general management, auditing costs and regular day-to-day costs i.e. electricity bill, rent for accommodations, IT costs. These overhead expenses also include expenses related to the development of new insurance and reinsurance business, advertising insurance products, improvement of the internal processes such as investment in a system required to support insurance and reinsurance business (e.g. buying new IT system and developing new software).

1.2.3.45. The allocation of overhead expenses to homogeneous risk groups or the premium provisions and the provisions for claims outstanding shall be done in a realistic and objective manner and on a consistent basis over time. The same requirements shall apply to the allocation of overhead expenses to existing and future business.

1.2.3.46. Administrative expenses are expenses which are connected with policy administration. Some administrative expenses relate directly to an insurance contract or contract activity (e.g. maintenance cost) such as cost of premium billing, cost of sending regular information to policyholders and cost of handling policy changes (e.g. conversions and reinstatements). Other administrative expenses relate directly to insurance contracts or contract activity but are a result of activities that cover more than one policy such as salaries of staff responsible for policy administration.

1.2.3.47. Investment management expenses are usually not allocated on a policy by policy basis but at the level of a portfolio of insurance contracts. Investment management expenses could include expenses of recordkeeping of the investments' portfolio, salaries of staff responsible for investment, remunerations of external advisers, expenses connected with investment trading activity (i.e. buying and selling of the portfolio securities) and in some cases remuneration for custodial services. Investment management expenses should be based on a portfolio of assets appropriate to cover the portfolio of obligations. Where future discretionary benefits depend on the assets held by the insurer and for unit-linked contracts, the insurer should ensure that the future investment management expenses allow for any expected changes to the future aforementioned portfolio of assets. In particular, where appropriate given the materiality of its impact on technical provisions and/or capital requirements, a dynamic expense allowance should be used to reflect a dynamic asset strategy.

1.2.3.48. Investment management expenses often differ for different asset classes. To ensure that they properly reflect the characteristics of the portfolio, investment management expenses should be calculated separately for different asset classes.

1.2.3.49. Acquisition expenses include expenses which can be identified at the level of the individual insurance contract and are related to the insurer selling and issuing the contract, for example commission costs, costs of selling, underwriting and initiating an insurance contract that has been issued.

1.2.3.50. To the extent that future premiums from existing insurance and reinsurance contracts are taken into account in the valuation of the BEP, expenses relating to these future premiums should be taken into consideration.

1.2.3.51. Insurers should consider their own analysis of expenses as well as any relevant data from external sources. Insurers should assess the availability of market data on expenses by considering the representativeness of any such external data relative to the portfolio and the credibility and reliability of that data.

1.2.3.52. Where average market information is used, consideration needs to be given as to the representativeness of the data used to form that average. For example, market information is not deemed to be sufficiently representative where the market information has material dispersion in representativeness of the portfolios whose data have been used to calculate such market information. The assessment of credibility considers the volume of data underlying the market information.

1.2.3.53. Assumptions with respect to future expenses arising from commitments made on or prior to the date of valuation have to be appropriate and take into account the type of expenses involved. Insurers should ensure that expense assumptions allow for future changes in expenses and that such an allowance for inflation is consistent with the economic assumptions made. Future expense cash flows are usually assumed to vary with assumed rates of expense inflation in a reasonable manner.

1.2.3.54. Relevant market data needs to be used to determine expense assumptions which include an allowance for future cost increases. The correlation between inflation rates and interest rates should be taken into account. Insurers need to ensure that the allowance for inflation is consistent with the economic assumptions made, which could be achieved if the probabilities for each inflation scenario are consistent with probabilities implied by market interest rates. Furthermore, expense inflation must be consistent with the types of expenses being considered (e.g. different levels of inflation might be expected regarding office space rents, salaries of different types of staff, IT systems, medical expenses, etc.).

1.2.3.55. Any assumptions of an expected cost reduction should be realistic, objective and based on verifiable actual data and experience, and not simply on future planned actions, the feasibility and outcome of which are not certain.

1.2.3.56. For the assessment of the future expenses, insurers should take into account all the expenses that are directly related to the on-going administration of obligations related to existing insurance and reinsurance contracts, together with a share of the relevant overhead expenses. The share of overheads should be assessed on the basis that the insurer continues to write further new business (if it currently does). Overhead expenses should be apportioned between existing and future business based on recent analyses of the operations of the business, the identification of appropriate expense drivers and any relevant expense apportionment ratios. Cash flow projections should include, as cash out-flows, the recurrent overheads attributable to the existing business at the valuation date of the BEP.

1.2.3.57. In order to determine which expenses best reflect the characteristics of the underlying portfolio and to ensure that the technical provisions are calculated in a prudent, reliable and objective manner, insurers should consider the appropriateness of both market-consistent expenses and entity-specific expenses. If sufficiently reliable market-consistent expenses are not available, participants should use entity-specific information to determine expenses that will be incurred in servicing insurance and reinsurance obligations provided that the entity-specific information is assessed to be appropriate.

1.2.3.58. Expenses that are determined by contracts between the insurer and third parties should be taken into account based on the terms of the contract. In particular,

- Commissions arising from insurance contracts have to be considered based on the terms of the contracts between the insurer and the sales persons; and
- Expenses in respect of reinsurance are taken into account based on the contracts between the insurer and its reinsurers.

Tax payments

1.2.3.59. In determining the BEP, the insurer should take into account taxation payments which are, or are expected to be, charged to policyholders or are required to settle the insurance or reinsurance obligations.

1.2.3.60. Different taxation regimes exist across jurisdictions that the insurer may be exposed to giving rise to a broad variety of tax rules in relation to insurance contracts. The assessment of the expected cash flows underlying the technical provisions should take into account any taxation payments which are charged to policyholders, or which would be required to be made by the insurer or reinsurer to settle insurance obligations. All other tax payments should be taken into account under other balance sheet items.

1.2.3.61. The following tax payments should be included in the BEP:

- Transaction based – such as premium taxes, value added taxes and goods and services taxes;
- Levies – such as fire service levies and guarantee fund assessments that arise direct from recognised insurance or reinsurance contracts, or that can be attributed to the contracts on a reasonable and consistent basis

Contributions which were already included in companies' expense assumptions (i.e. levies paid by insurance companies to industry protection schemes) should not be included.

1.2.3.62. The allowance for tax payments in the BEP should be consistent with the amount and timing of the taxable profits and losses that are expected to be incurred in the future. In cases where changes to taxation requirements are substantially enacted, the pending adjustments should be reflected.

Homogeneous risk groups of life insurance obligations

1.2.3.63. The cash flow projections used in the calculation of BEPs for life insurance obligations shall be made separately for each policy. Where the separate calculation for each policy would be an undue burden on the insurer, it may carry out the projection by grouping policies, provided that the grouping complies with the following requirements:

1) There are no significant differences in the nature and complexity of the risks underlying the policies that belong to the same group;
2) The grouping of policies does not misrepresent the risk underlying the policies and does not misstate their expenses;
3) The grouping of policies is likely to give approximately the same results for the calculation of the BEP as a calculation on a per policy basis, particularly in relation to financial guarantees and contractual options included in the policies.

1.2.3.64. In certain circumstances, the BEP element of technical provisions may be negative. This is acceptable and insurers should not set to zero the value of the BEP with respect to those individual contracts.

1.2.3.65. No implicit or explicit surrender value floor should be assumed for the amount of the market-consistent value of liabilities for a contract. This means that if the sum of a BEP and a risk margin of a contract is lower than the surrender value of that contract there is no requirement to increase the value of insurance liabilities to the surrender value of the contract.

Expert Judgement

1.2.3.66. Insurers shall choose assumptions based on the expertise of persons with relevant knowledge, experience and understanding of the risks inherent in the insurance or reinsurance business thereof (expert judgment). In certain circumstances expert judgement may be necessary when calculating the BEP, among others:

1) In selecting the data to use, correcting its errors and deciding the treatment of outliers or extreme events;
2) In adjusting the data to reflect current or future conditions, and adjusting external data to reflect the insurer's features or the characteristics of the relevant portfolio;
3) In selecting the time period of the data;
4) In selecting realistic assumptions;

5) In selecting the valuation technique or choosing the most appropriate alternatives existing in each methodology;
6) In incorporating appropriately to the calculations, the environments under which the insurer has to run its business.

Obligations in different currencies

1.2.3.67. The probability-weighted average cash flows should take into account the time value of money. The time value of money of future cash flows in different currencies is calculated using the risk-free term structure for the relevant currency. Therefore the BEP should be calculated separately for obligations in different currencies. In particular, where (as is common for Isle of Man life insurers) a contract includes cash flows in different currencies (e.g. premiums and charges in US dollars, expenses in pounds sterling) the time value of the cash flows for each currency should be calculated using the relevant risk-free term structure. This can be achieved either by using a separate risk-free term structure for the different currencies, or by converting all cash flows into one currency (the "projection currency") using forward exchange rates derived from the different risk-free term structures and calculating the time value using the risk-free term structure relevant to the projection currency. In both cases the present value of obligations in each currency must be capable of being separately identified.

1.2.3.68. Where there are no guarantees associated with the contract it will be theoretically correct to project all underlying assets using the risk-free curve of the currency of the contract, discounting at the same rate. This is equivalent to projecting and discounting using individual risk-free curves for each currency as in both cases the growth rates and discount rates are identical. However it will be important that in each of the currency stress scenarios the starting value of the fund reflects the appropriate stress to the values of the components of the fund invested in assets denominated in that currency group. For the avoidance of doubt, cash flows which are fixed in monetary terms such as future premiums, or future expense charges expressed as a monetary amount rather than a percentage of funds, must be projected and discounted using the appropriate risk-free curves or consistent forward exchange rates as per 1.2.3.67.

Valuation of options and guarantees embedded in insurance contracts

1.2.3.69. When calculating the BEP, insurers shall identify and take into account:

1) All financial guarantees and contractual options included in their insurance and reinsurance policies;
2) All factors which may materially affect the likelihood that policyholders will exercise contractual options or the value of the option or guarantee.

Definition of contractual options and financial guarantees

1.2.3.70. A contractual option is defined as a right to change the benefits[1], to be taken at the choice of its holder (generally the policyholder), on terms that are established in advance. Thus, in order to trigger an option, a deliberate decision of its holder is required.

1.2.3.71. Some (non-exhaustive) examples of contractual options which may be pre-determined in a contract and thus do not require again the consent of the parties to renew or modify the contract include the following:

1) Surrender value option, where the policyholder has the right to fully or partially surrender the policy and receive a pre-defined lump sum amount;
2) Paid-up policy option, where the policyholder has the right to stop paying premiums and change the policy to a paid-up status;
3) Annuity conversion option, where the policyholder has the right to convert a lump sum survival benefit into an annuity at a pre-defined minimum rate of conversion;
4) Policy conversion option, where the policyholder has the right to convert from one policy to another at pre-specified terms and conditions;
5) Extended coverage option, where the policyholder has the right to extend the coverage period at the expiry of the original contract without producing further evidence of health, or where the insurer is constrained in the level of charges it can then apply.

1.2.3.72. A financial guarantee is present when there is the possibility for the policyholder to pass losses to the insurer or to receive additional benefits[2] as a result of the evolution of financial variables (solely or in conjunction with non-financial variables) (e.g. investment return of the underlying asset portfolio, performance of indices, etc.). In the case of guarantees, the trigger is generally automatic (the mechanism would be set in the policy's terms and conditions) and thus not dependent on a deliberate decision of the policyholder/beneficiary. In financial terms, a guarantee is linked to option valuation.

1.2.3.73. The following is a non-exhaustive list of examples of common financial guarantees embedded in life insurance contracts:

1) Guaranteed invested capital, including guaranteed maturity values on capital redemption contracts;
2) Guaranteed minimum investment return;
3) Profit sharing.

[1] This should be interpreted as also including the potential for reduction of the level of premiums that would be charged in the future

[2] This should be interpreted as also including the potential for reduction of the level of premiums that would be charged in the future

Valuation requirements

1.2.3.74. For each type of contractual option, insurers are required to identify the risk drivers which have the potential to materially affect (directly or indirectly) the frequency of option take-up rates considering a sufficiently large range of scenarios, including adverse ones.

1.2.3.75. The BEP for contractual options and financial guarantees must capture the uncertainty of cash flows, taking into account the likelihood and severity of outcomes from multiple scenarios combining the relevant risk drivers.

1.2.3.76. The BEP for contractual options and financial guarantees should reflect both the intrinsic value and the time value.

1.2.3.77. The BEP for contractual options and financial guarantees may be valued by using one or more of the following methodologies:

1) A stochastic approach using, for instance, a market-consistent asset model (includes both closed form and stochastic simulation approaches);
2) A series of deterministic projections with attributed probabilities; and
3) A deterministic valuation based on expected cash flows in cases where this delivers a market-consistent valuation of the technical provisions, including the cost of any options and guarantees.

1.2.3.78. For the purposes of valuing the BEP for contractual options and financial guarantees, a stochastic simulation approach would consist of an appropriate market-consistent asset model for projections of asset prices and returns (such as equity prices, fixed interest rate and property returns), together with a dynamic model incorporating the corresponding value of liabilities (incorporating the stochastic nature of any relevant non-financial risk drivers) and the impact of any foreseeable actions to be taken by management.

1.2.3.79. For the purposes of the deterministic approach, a range of scenarios or outcomes appropriate to both valuing the options or guarantees and the underlying asset mix, together with the associated probability of occurrence should be set. These probabilities of occurrence should be weighted towards adverse scenarios to reflect market pricing for risk. The series of deterministic projections should be numerous enough to capture a wide range of possible out-comes (and, in particular, it should include very adverse yet possible scenarios) and take into account the probability of each outcome's likelihood (which may, in practice, need to incorporate expert judgement). The costs will be understated if only relatively benign or limited economic scenarios are considered.

1.2.3.80. When the valuation of the BEP for contractual options and financial guarantees is not being done on a policy-by-policy basis, the segmentation considered should not distort the valuation of technical provisions by, for example, forming groups containing policies which are "in the money" and policies which are "out of the money".

1.2.3.81. Regarding contractual options, the assumptions on policyholder behaviour should be appropriately founded in statistical and empirical evidence, to the extent that it is deemed representative of the future expected behaviour. However, when assessing the experience of policyholders' behaviour, appropriate attention based on expert judgement should be given to the fact that when an option is out of or barely in the money, the behaviour of policyholders should not be considered to be a reliable indication of likely policyholders' behaviour when the options are heavily in-the-money.

1.2.3.82. Appropriate consideration should also be given to an increasing future awareness of policy options as well as policyholders' possible reactions to a changed financial position of an insurer. In general, policyholders' behaviour should not be assumed to be independent of financial markets, a firm's treatment of customers or publicly available information unless proper evidence to support the assumption can be observed.

Valuation of future discretionary benefits

1.2.3.83. In calculating the BEP, insurers should take into account future discretionary benefits which are expected to be made, whether or not those payments are contractually guaranteed.

1.2.3.84. When insurers calculate the BEP, the value of future discretionary benefits should be calculated separately, if material.

1.2.3.85. "Future discretionary benefits" means benefits of insurance or reinsurance contracts which have one of the following characteristics:

1) The benefits are legally or contractually based on one or several of the following results:
   a) The performance of a specified pool of contracts or a specified type of contract or a single contract;
   b) Realised or unrealised investment return on a specified pool of assets held by the insurance or reinsurance entity;
   c) The profit or loss of the insurer or fund that issues the contract that gives rise to the benefits;
2) The benefits are based on a declaration of the insurer and the timing or the amount of the benefits is at its discretion.

1.2.3.86. Index-linked and unit-linked benefits should not be considered as discretionary benefits.

1.2.3.87. The distribution of future discretionary benefits is a management action and assumptions about it should be objective, realistic and verifiable. In particular, assumptions about the distribution of future discretionary benefits should take the relevant and material characteristics of the mechanism for their distribution into account.

1.2.3.88. Where the future discretionary benefits depend on the assets held by the entity, the calculation of the BEP should be based on the current assets held by the insurer. Future changes of the asset allocation should be taken into account according to the requirements on future management actions.

1.2.3.89. The assumptions on the future returns of these assets, valued according to 1.1, should be consistent with the relevant risk-free interest term structure(s) for the currency/ies involved. Where a risk-neutral approach for the valuation is used, the set of assumptions on returns of future investments underlying the valuation of discretionary benefits should be consistent with the principle that they should not exceed the level given by the forward rates derived from the risk-free interest rates.

Assumptions underlying the calculation of the BEP

Assumptions consistent with information provided by financial markets

1.2.3.90. Assumptions consistent with information about, or provided by, financial markets include (non-exhaustive list):

1) Relevant risk-free interest rate term structure(s);
2) Currency exchange rates;
3) Market inflation rates (consumer price index or sector inflation);
4) Implied volatilities; and
5) Economic scenario files (ESF).

1.2.3.91. When insurers derive assumptions on future financial market parameters or scenarios, they should be able to demonstrate that the choice of the assumptions is appropriate and consistent with the valuation principles set out in 1.1.

1.2.3.92. Where the insurer uses a model to produce future projections of market parameters (a market-consistent asset model, e.g. an economic scenario file), such a model should comply with the following requirements:

1) It generates asset prices that are consistent with deep, liquid and transparent financial markets;
2) It assumes no arbitrage opportunities exist;
3) The calibration of the parameters and the scenarios is consistent with the relevant risk-free interest rate term structure used to calculate the BEP.

1.2.3.93. The following principles should be taken into account in determining the appropriate calibration of a market-consistent asset model:

1) The asset model should be calibrated to reflect the nature and term of the liabilities, particularly for those liabilities giving rise to significant guarantee and option costs;
2) The asset model should be calibrated to the current risk-free term structure used to discount the cash flows;
3) The asset model should be calibrated to a properly calibrated volatility measure.

1.2.3.94. In principle, the calibration process should use market prices only from financial markets that are sufficiently deep, liquid and transparent. If the derivation of a parameter is not possible by means of prices from deep, liquid and transparent markets, other market prices or data may be used. In this case, particular attention should be paid to any distortions of the market prices. Corrections for the distortions should be made in a deliberate, objective and reliable manner.

1.2.3.95. The calibration of the above mentioned asset models may also be based on adequate actuarial and statistical analysis of economic variables provided they produce market-consistent results. For example:

1) To inform the appropriate correlations between different asset returns;
2) To determine probabilities of transitions between credit quality steps and default of corporate bonds;
3) To determine property volatilities. As there is virtually no market in property derivatives, it is difficult to derive property implied volatility. Thus the volatility of a property index may often be used instead of property implied volatility.

1.2.3.96. Note that all components of assets and liabilities must be valued in a market-consistent manner, where a suitably reliable market price exists. This includes components of the liability in unit-linked contracts which are linked to the value of the underlying assets. In this case these components of the liability must be valued consistently with the value of the underlying assets. The assumptions on the future returns of these assets (and hence the liability), valued according to 1.1, should be consistent with the relevant risk-free interest term structure(s) for the currency/ies involved. Where a risk-neutral approach for the valuation is used, the set of assumptions on returns of future investments should be consistent with the principle that they should not exceed the level given by the forward rates derived from the risk-free interest rates. Where other methodologies are used, the value of the liability must not be less than that which would be obtained from a risk-neutral approach.

Unbiased current assumptions

1.2.3.97. Unbiased current assumptions are derived from a combination of relevant, credible experience as well as judgment about its expected future development, e.g. improving mortality rates or inflation of expenses, that neither deliberately overstates nor understates the expected outcome. Reconsideration of data and assumptions should occur every time the technical provisions are valued, with revisions made as appropriate to ensure data and assumptions remain appropriate to current conditions. Consistent with reliability of outcome, subjectivity in valuation should be reduced as far as practicable. This may be achieved by using information available from effective internal control processes, market valuations and other relevant current or factual information, by applying professional standards and subjecting valuations to independent review.

1.2.3.98. Observable data, such as interest rates, financial market prices and inflation rates may be expected to be different each time the current estimate is determined. In particular, cash flows are sensitive to inflation rates. Where assumptions are derived from observed values in the market, these should be the observed values current at the date of the valuation.

1.2.3.99. Regular experience analysis, considering the individual entity and relevant industry experience where appropriate, should be undertaken to support the assumptions used for insurance technical risks. Where assumptions depend on the results of such experience analyses, the most recent experience for the portfolio need not necessarily represent the most credible current assumption for that portfolio. Greater credibility may be achieved by the analysis of several years' experience, smoothing out fluctuations in experience and allowing appropriately for any trends in experience that may be evident. However, care should also be taken that historical experience remains relevant to current conditions.

1.2.3.100. Where the credibility of an insurer's own experience is low, for example for a small or new portfolio of insurance contracts, assumptions based on the relevant industry experience are likely to be more decision useful as a basis for projecting its cash flows.

1.2.3.101. The assumptions used should, in principle, reflect the characteristics of the portfolio rather than those of the particular insurer holding that portfolio. However, it is important to note that, in practice, the characteristics of the portfolio underwritten by an insurer may reflect aspects of an insurer's specific business practices, particularly with regard to its underwriting, claims handling and expenses. Company-specific information may be appropriate, for example, where the insurer's business model and practices are sufficiently substantiated as representative of the portfolio and similar information is used in market valuations.

Policyholders' behaviour

1.2.3.102. Insurers are required to identify policyholders' behaviour.

1.2.3.103. Any assumptions made by insurers with respect to the likelihood that policyholders will exercise contractual options, including lapses and full or partial surrenders, should be realistic and based on current and credible information. The assumptions should take account, either explicitly or implicitly, of the impact that future changes in financial and non-financial conditions may have on the exercise of those options.

1.2.3.104. Assumptions about the likelihood that policyholders will exercise contractual options should be based on analysis of past policyholder behaviour and a prospective assessment of expected future policyholder behaviour. The analysis should take into account the following:

1) How beneficial the exercise of the options was or would have been to the policyholders under past circumstances (whether the option is out of or barely in the money or is in the money);
2) The influence of past and future economic conditions;

3) The impact of past and future management actions;
4) Where relevant, how past projections compared to the actual outcome;
5) Any other circumstances that are likely to influence a decision whether to exercise the option.

1.2.3.105. The likelihood that policyholders will exercise contractual options, including lapses and surrenders, should not be assumed to be independent of the elements mentioned in points 1) to 5) in the previous paragraph, unless proper evidence to support such an assumption can be observed or where the impact would not be material.

1.2.3.106. In general, policyholders' behaviour should not be assumed to be independent of financial markets, of the insurer's treatment of customers or of publicly available information unless proper evidence to support the assumption can be observed.

1.2.3.107. Policyholder options to surrender or part surrender are often dependent on financial markets and entity-specific information, in particular the financial position of the insurer.

1.2.3.108. Policyholders' option to lapse and also in certain cases to surrender or part surrender are mainly dependent on the change of policyholders' status such as the ability to further pay the premium, employment, divorce, etc.

Management actions

1.2.3.109. The methods and techniques for the estimation of future cash flows, and hence the assessment of the provisions for insurance liabilities, should take account of potential future actions by the management of the insurer. To be eligible for use, 1.2.3.118 states that the management actions should be formally documented and approved by the Board.

1.2.3.110. As examples, the following should be considered:

1) Changes in product charges, for example related to increased administration charges on unit-linked or index-linked business, or related to guarantee charges, increase in mortality or morbidity charges to reflect adverse mortality or morbidity experience. It should be noted, however, that the extent to which an insurer has no restriction in varying such charges should be carefully considered according to the requirements set out in 1.2.3.14 - 1.2.3.32.
2) Asset-liability management actions;
3) Changes in bonus rates or product changes, for example on policies with profit participation to mitigate market risks.

1.2.3.111. The assumptions on future management actions used in the calculation of the technical provisions should be determined in an objective manner.

1.2.3.112. Assumed future management actions should be realistic and consistent with the (re)insurer's current business practice and business strategy, including the use of risk mitigating techniques. If there is sufficient current evidence that the insurer will change its practices or strategy, the assumed future management actions should be consistent with the changed practices or strategy.

1.2.3.113. Assumed future management actions should be consistent with each other.

1.2.3.114. Insurers should not assume that future management actions would be taken that would be contrary to their obligations towards policyholders and beneficiaries or to legal provisions applicable to the insurers.

1.2.3.115. The assumed future management actions should take account of any public indications by the insurer or reinsurer as to the actions that it would expect to take, or not take in the circumstances being considered.

1.2.3.116. Assumptions about future management actions should take account of the time needed to implement the management actions and any expenses caused by them.

1.2.3.117. Insurers should be able to verify that assumptions about future management actions are realistic through:

1) A comparison of assumed future management actions with management actions actually taken previously by the insurer or reinsurer;
2) A comparison of future management actions taken into account in the current and past calculations of the BEP;
3) An assessment of the impact of changes in the assumptions of future management actions on the value of the technical provisions.

1.2.3.118. All assumed future management actions should be clearly documented and have been approved by the Appointed Actuary, in particular in relation to 1.2.3.114, and the Board of the insurer before inclusion in the valuation basis.

Recoverables

Recoverables from reinsurance contracts and special purpose vehicles

1.2.3.119. The BEP should be calculated gross, without deduction of amounts recoverable from reinsurance contracts and special purpose vehicles. The value of these amounts should be calculated and shown separately.

1.2.3.120. The calculation by insurers of amounts recoverable from reinsurance contracts and special purpose vehicles should follow the same principles and methodology as presented in this section for the calculation of other parts of the technical provisions.

1.2.3.121. There is no need, however, to calculate a risk margin for amounts recoverable from reinsurance contracts and special purpose vehicles because a single net calculation of the risk margin should be performed rather than two separate calculations (i.e. one for the risk margin of the technical provisions net of recoverables from reinsurance and special purpose vehicles rather than one for the risk margin of the gross technical provisions and one for the risk margin of recoverables from reinsurance contracts and special purpose vehicles). Where insurers calculate a risk margin using an internal model, they can either perform one single net calculation or two separate calculations.

1.2.3.122. When calculating amounts recoverable from reinsurance contracts and special purpose vehicles, insurers should take account of the time difference between recoveries and direct payments.

1.2.3.123. Where, for certain types of reinsurance and special purpose vehicles, the timing of recoveries and that for direct payments of the insurer markedly diverge, this should be taken into account in the projection of cash flows. Where such timing is sufficiently similar to that for direct payments, the insurer may use the timing of direct payments.

1.2.3.124. The amounts recoverable from reinsurance contracts and special purpose vehicles shall be calculated consistently with the boundaries of the insurance and reinsurance contracts to which the amounts recoverable from reinsurance contracts and special purpose vehicles relate.

1.2.3.125. The result from the calculation should be adjusted to take account of expected losses due to default of the counterparty. This adjustment should be calculated and shown separately and should be based on an assessment of the probability of default of the counterparty, whether this arises from insolvency, dispute or another reason, and the average loss resulting therefrom (loss-given-default).

1.2.3.126. The amounts recoverable from special purpose vehicles, the amounts recoverable from finite reinsurance contracts and the amounts recoverable from other reinsurance contracts should each be calculated separately. The amounts recoverable from a special purpose vehicle should not exceed the aggregate maximum risk exposure of this special purpose vehicle to the insurer or reinsurer.

1.2.3.127. For the purpose of calculating the amounts recoverable from reinsurance contracts and special purpose vehicles, the cash flows should only include payments in relation to compensation of insurance events and unsettled insurance claims. Payments in relation to other events or settled insurance claims should not be accounted for as amounts recoverable from reinsurance contracts and special purpose vehicles. Where a deposit has been made for the mentioned cash flows, the amounts recoverable should be adjusted accordingly to avoid a double counting of the assets and liabilities relating to the deposit.

1.2.3.128. Debtors and creditors that relate to settled claims of policyholders or beneficiaries should not be included in the recoverable.

1.2.3.129. If payments from the special purpose vehicles to the insurer do not directly depend on the claims against the insurer ceding risks (for example if payments are made according to certain external indicators, such as an earthquake index or general population mortality), the amounts recoverable from these special purpose vehicles for future claims should only be taken into account to the extent it is possible for the structural mismatch between claims and amounts recoverable (basis risk) to be measured in a prudent, reliable and objective manner and where the underlying risks are adequately reflected in the calculation of the Solvency Capital Requirement.

1.2.3.130. Any compensation for past and future policyholder claims should only be taken into account to the extent it can be verified in a deliberate, reliable and objective manner.

1.2.3.131. Expenses which the insurer incurs in relation to the management and administration of reinsurance and special purpose vehicle contracts should be allowed for in the BEP, calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. No allowance for expenses related to the internal processes should be made in the recoverables.

Counterparty default adjustment

Definition of the adjustment

1.2.3.132. The result from the calculation of the previous section should be adjusted to take account of expected losses due to default of the counterparty. This adjustment should be calculated and shown separately and should be based on an assessment of the probability of default of the counterparty, whether this arises from insolvency, dispute or another reason, and the average loss resulting there from (loss-given-default). For this purpose, the change in cash flows shall not take into account the effect of any risk mitigating technique that mitigates the credit risk of the counterparty. These risk mitigating techniques shall be separately recognised without increasing the amount recoverable from reinsurance contracts and special purpose vehicles.

1.2.3.133. The adjustment should be calculated as the expected present value of the change in cash flows underlying the amounts recoverable from that counterparty, resulting from a default of the counterparty at a certain point in time.

1.2.3.134. This calculation should take into account possible default events over the lifetime of the rights arising from the corresponding reinsurance contract or special purpose vehicle and the dependence on time of the probability of default.

Probability of default

1.2.3.135. The probability of default (PD) of special purpose vehicles should be calculated according to the average credit quality step of assets held by the special purpose vehicle, unless there is a reliable basis for an alternative calculation.

1.2.3.136. The determination of the adjustment for counterparty default should take into account possible default events during the whole run-off period of the recoverables.

1.2.3.137. The assessment of the probability of default and the loss-given-default of the counterparty should be based upon current, reliable and credible information. Among the possible sources of information are: credit spreads, credit quality steps, judgements, information relating to the supervisory solvency assessment, and the financial reporting of the counterparty. The applied methods should guarantee market consistency. The insurer should not rely on information of a third party without assessing that the information is current, reliable and credible.

1.2.3.138. In particular, the assessment of the probability of default should be based on methods that guarantee the market-consistency of the estimates of the PD.

1.2.3.139. Some criteria to assess the reliability of the information might be, for example, neutrality, prudency and completeness in all material aspects.

1.2.3.140. The insurer may consider for this purpose methods generally accepted and applied in financial markets (i.e. based on CDS markets), provided the financial information used in the calculations is sufficiently reliable and relevant for the purposes of the adjustment of the recoverables from reinsurance.

1.2.3.141. 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. In this case, the assessment should take the possible time-dependence of the probability of default into account. If point-in-time estimates are not possible to calculate in a reliable, objective and prudent manner or their application would not be proportionate, through-the-cycle estimates of the probability of default might be used.

1.2.3.142. A common assumption about probabilities of default is that they are not constant over time. In this regard it is possible to distinguish between point-in-time estimates which try to determine the current default probability and through-the-cycle estimates which try to determine a long-time average of the default probability.

1.2.3.143. In many cases, only through-the-cycle estimates may be available. For example, the credit quality steps of rating agencies are usually based on through-the-cycle assessments. Moreover, a sophisticated analysis of the time dependence of the probability of default may be disproportionate in most cases. Hence, through-the-cycle estimates might be used if point-in-time estimates cannot be derived in a reliable, objective and prudent manner or their application would not be in line with the proportionality principle. If through-the-cycle estimates are applied, it can usually be assumed that the probability of default does not change during the run-off of the recoverables.

1.2.3.144. The assessment of the probability of default should take into account the fact that the cumulative probability increases with the time horizon of the assessment.

1.2.3.145. For example, clearly the probability that the counterparty defaults during the next two years is higher than the probability of default during the next year.

1.2.3.146. Often, only the probability of default estimate, PD, during the following year is known. For example, if this probability is expected to be constant over time, then the probability PD_t that the counterparty defaults during year t can be calculated as:

$$PD_t = PD \cdot (1 - PD)^{t-1}$$

1.2.3.147. This does not preclude the use of simplifications, where the effect of using them is not material.

Recovery Rate

1.2.3.148. The recovery rate (RR) is the share of the debts that the counterparty will still be able to honour in case of default.

1.2.3.149. If no reliable estimate of the recovery rate of a counterparty is available a rate lower than 50% should be used.

1.2.3.150. The degree of judgement that can be used in the estimation of the recovery rate should be restricted, especially where owing to a low number of defaults, little empirical data about this figure in relation to reinsurers is available, and hence, estimations of recovery rates are unlikely to be reliable.

1.2.3.151. The average loss resulting from the default of a counterparty should include an estimation of the credit risk of any risk-mitigating instruments that the counterparty provided to the insurer ceding risks to the counterparty.

1.2.3.152. However, insurers should consider the adjustment for the expected default losses of these mitigating instruments, i.e. the credit risk of the instruments as well as any other risk connected to them should also be allowed for. This allowance may be omitted where the impact is not material. To assess this materiality, it is necessary to take into account the relevant features, such as the period of effect of the risk mitigating instrument.

Simplification for the counterparty default adjustment

1.2.3.153. Insurers and reinsurers may calculate the adjustment for expected losses due to default of the counterparty for a specific counterparty and homogeneous risk group as follows:

$$Adj_{CD} = -\max\left(0; 0.5 \cdot \frac{PD}{1 - PD} \cdot Dur_{mod} \cdot BE_{rec}\right)$$

Where:

- PD is the probability of default of that counterparty during the following 12 months;
- Dur_{mod} is the modified duration of the amounts recoverable from reinsurance contracts with that counterparty in relation to that homogeneous risk group;
- BE_{rec} is the amount recoverable from reinsurance contracts with that counterparty in relation to that homogeneous risk group.

1.2.4. Risk Margin

Definition of the risk margin and general methodology for its calculation

1.2.4.1. Technical provisions consist of the BEP and the risk margin. The risk margin is included in technical provisions in order to ensure that the value of technical provisions represents the economic value of the insurer fulfilling its insurance obligations to policyholders and other beneficiaries arising over the lifetime of the insurer's portfolio of insurance policies.

1.2.4.2. The risk margin will be calculated by determining the cost of providing an amount of eligible own funds equal to the Solvency Capital Requirement ("SCR") necessary to support the insurance and reinsurance obligations over the lifetime thereof. The rate used in the determination of the cost of providing that amount of eligible own funds is called the Cost-of-Capital rate.

1.2.4.3. The calculation of the risk margin is based on the following transfer scenario:

1) The whole portfolio of insurance and reinsurance obligations of the insurer that calculates the risk margin ("original insurer") is taken over by another insurer ("reference insurer");
2) The transfer of insurance and reinsurance obligations includes any reinsurance contracts and arrangements with special purpose vehicles relating to these obligations;
3) The reference insurer does not have any existing insurance or reinsurance obligations or any own funds before the transfer takes place;
4) After the transfer, the reference insurer raises eligible own funds equal to the SCR necessary to support the insurance and reinsurance obligations over the lifetime thereof;
5) After the transfer, the reference insurer therefore has assets to cover its SCR and the technical provisions net of the amounts recoverable from reinsurance contracts and special purpose vehicles;
6) The assets should be considered to be selected in such a way that they minimise the SCR for (residual) market risk that the reference insurer is exposed to (i.e. market risks are hedged to the maximum extent possible using available market instruments, subject to the insurer, and hence the reference insurer, having sufficient knowledge of the underlying assets to be able to hedge such risks);
7) The SCR of the reference insurer captures:
    a) Underwriting risk with respect to the transferred business;
    b) Where it is material, the residual market risk referred to above, other than interest rate risk;
    c) Credit risk with respect to reinsurance contracts, arrangements with special purpose vehicles, intermediaries, policyholders and any other material exposures which are closely related to the insurance and reinsurance obligations;
    d) Operational risk.
8) The loss-absorbing capacity of technical provisions in the reference insurer corresponds, for each risk, to the loss-absorbing capacity of technical provisions in the original insurer;
9) There is no loss-absorbing capacity of deferred taxes for the reference insurer;
10) Without prejudice to the transfer scenario, the reference insurer will adopt future management actions that are consistent with the assumed future management actions of the original insurer.

1.2.4.4. The SCR necessary to support the insurance and reinsurance obligations over the lifetime thereof should be equal to the SCR of the reference insurer in the scenario set out above.

1.2.4.5. As the original insurer transfers its whole portfolio to the reference insurer, the SCR of the reference insurer, and consequently the risk margin, reflects the level of diversification of the original insurer. In particular, it takes into account the diversification between lines of business.

1.2.4.6. The calculation of the risk margin should be based on the assumption that the reference insurer at time t = 0 (when the transfer takes place) will capitalise itself to the required level of eligible own funds, i.e.

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

Where:

- $EOF_{RI}(0)$ is the amount of eligible own funds raised by the reference insurer at time t=0 (when the transfer takes place); and
- $SCR_{RI}(0)$ is the SCR at time t=0 as calculated for the reference insurer.

The cost of providing this amount of eligible own funds equals the Cost-of-Capital rate times this amount.

1.2.4.7. The assessment referred to in the previous paragraph applies to the eligible own funds to be provided by the reference insurer in all future years.

1.2.4.8. The transfer of insurance obligations is assumed to take place immediately. Hence, the method for calculating the overall risk margin (RM) can in general terms be expressed in the following manner:

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

Where:

- RM is the risk margin;
- $SCR_{RI}(t)$ is the SCR for year t as calculated for the reference insurer;
- r_t is the basic risk-free rate for maturity t;
- CoC is the Cost-of-Capital rate.

1.2.4.9. All SCRs that are to be used in the risk margin calculation (i.e. all $SCR_{RI}(t)$ for $t \geq 0$) should in principle be calculated as follows:

$$SCR_{RI}(t) = BSCR_{RI}(t) + SCR_{RI,op}(t) + Adj_{RI}(t)$$

Where:

- $BSCR_{RI}(t)$ is the basic SCR for year t as calculated for the reference insurer;
- $SCR_{RI,op}(t)$ is the partial SCR regarding operational risk for year t as calculated for the reference insurer;
- $Adj_{RI}(t)$ is the adjustment for the loss absorbing capacity of technical provisions for year t as calculated for the reference insurer.

1.2.4.10. It should be ensured that the assumptions made regarding the loss-absorbing capacity of technical provisions to be taken into account in the SCR calculations are consistent with the assumptions made for the overall portfolio of the original insurer. The Basic SCR ($BSCR_{RI}(t)$ for all $t \geq 0$) should be calculated by using the relevant SCR shock scenarios.

1.2.4.11. With respect to market risk, only the residual market risk other than interest rate risk should be taken into account in the risk margin. Insurers should follow a practicable approach when they assess the residual market risk. It only needs to be taken into account where it is material. For mid-term life insurance obligations the residual market risk can often be considered to be nil. For long-term life insurance there might be an unavoidable interest rate risk. It is not likely to be material if the duration of the insurer's whole portfolio does not exceed the duration of risk-free financial instruments available in financial markets for the currencies of the portfolio. The assessment as to whether the residual market risk is significant should take into account that it usually decreases over the lifetime of the portfolio.

The Cost-of-Capital rate

1.2.4.12. The Cost-of-Capital rate is the annual rate to be applied to the capital requirement in each period. Because the assets covering the capital requirement themselves are assumed to be held in marketable securities, this rate does not account for the total return but merely for the spread over and above the risk-free rate.

1.2.4.13. The Cost-of-Capital rate is calibrated by the FSA in a manner that is consistent with the assumptions made for the reference insurer. In practice this means that the Cost-of-Capital rate should be consistent with the capitalisation of the reference insurer that corresponds to the SCR. The Cost-of-Capital rate therefore will not depend on the actual solvency position of the original insurer. For the purposes of the QIS4 exercise a Cost-of-Capital rate of 5% should be used. This is lower than the 6% currently specified by EIOPA for Solvency II purposes, to reflect the fact that Isle of Man insurers are not subject to taxation of investment returns on capital.

1.2.4.14. The risk margin should guarantee that sufficient technical provisions for a transfer are available in all scenarios. Hence, the Cost-of-Capital rate will be calibrated to a long-term average rate, reflecting both periods of stability and periods of stress.

Level of granularity in the risk margin calculations

1.2.4.15. The risk margin should be calculated per line of business. A straight forward way to determine the margin per line of business is as follows: first, the risk margin is calculated for the whole business of the entity, allowing for diversification between lines of business. In a second step the margin is allocated to the lines of business.

1.2.4.16. The risk margin for the whole portfolio of insurance and reinsurance obligations shall be equal to the following:

$$RM = CoC \cdot \sum_{t \geq 0} \frac{SCR_{RI}(t)}{(1 + r_{t+1})^{t+1}}$$

Where:

- CoC denotes the Cost-of-Capital rate;
- The sum covers all integers including zero;

- $SCR_{RI}(t)$ denotes the solvency capital requirement of the reference insurer after t years;
- r_{t+1} denotes the relevant basic risk-free interest rate for the maturity of $t+1$ years.

1.2.4.17. The basic risk-free interest rate r_{t+1} shall be chosen in accordance with the currency used for the financial statements of the insurer.

1.2.4.18. Insurers shall allocate the risk margin for the whole portfolio of insurance and reinsurance obligations to the relevant lines of business. The allocation shall adequately reflect the contributions of the lines of business to the Solvency Capital Requirement of the reference insurer over the lifetime of the whole portfolio of insurance and reinsurance obligations.

1.2.4.19. The risk margin per line of business should take the diversification between lines of business into account. Consequently, the sum of the risk margin per line of business should be equal to the risk margin for the whole business. The allocation of the risk margin to the lines of business should be done according to the contribution of the lines of business to the overall SCR during the lifetime of the business.

1.2.4.20. The contribution of a line of business can be analysed by calculating the SCR under the assumption that the insurer's other business does not exist. Where the relative sizes of the SCRs per line of business do not materially change over the lifetime of the business, insurers may apply the following simplified approach for the allocation:

$$RM_{lob} = \frac{SCR_{RI,lob}(0)}{\sum_{lob} SCR_{RI,lob}(0)} \cdot RM$$

Where:

- RM_{lob} is the risk margin allocated to line of business (lob);
- $SCR_{RI,lob}(0)$ is the SCR of the reference insurer for line of business (lob) at $t = 0$;
- RM is the risk margin for the whole business.

Simplifications for the calculation of the risk margin of the whole business

1.2.4.21. If a full projection of all future SCRs is necessary in order to capture the participating insurer's risk profile the insurer is expected to carry out these calculations.

1.2.4.22. Participating insurers should consider whether or not it would be appropriate to apply a simplified valuation technique for the risk margin. As an integral part of this assessment, the insurers should consider what kind of simplified methods would be most appropriate for the business. The chosen method should be proportionate to the nature, scale and complexity of the risks of the business in question.

1.2.4.23. When an insurer has decided to use a simplified method, it should consider whether the method could be used for the projections of the overall SCR or if the relevant (sub-) risks should be projected separately. In this context, the insurer should also consider whether it should carry out the simplified projections of future SCRs individually for each future year or if it is possible to calculate all future SCRs in one step.

A hierarchy of simplifications

1.2.4.24. Based on the general principles and criteria referred to above, the following hierarchy should be used as a decision basis regarding the choice of (non-simplified and simplified) methods for projecting future SCRs:

1) Make a full calculation of all future SCRs without using simplifications;
2) Approximate the individual risks or sub-risks within some or all shock scenarios to be used for the calculation of future SCRs;
3) Approximate the whole SCR for each future year, e.g. by using a proportional approach;
4) Estimate all future SCRs "at once", e.g. by using an approximation based on the duration approach;
5) Approximate the risk margin by calculating it as a percentage of the best estimate.

1.2.4.25. In this hierarchy the calculations get simpler with each step.

1.2.4.26. When choosing the calculation method, it is not required that the complexity of the calculations should go beyond what is necessary in order to capture the material characteristics of the insurer's risk profile.

1.2.4.27. The distinction between the levels in the hierarchy outlined above is not always clear-cut. For example, regarding the distinction between the simplification on level 2 and level 3, a proportional method (based on the development of the best estimate technical provisions) applied for an individual shock scenario relevant for the calculation of future SCRs for the reference insurer could be seen as belonging to either level 2 or level 3.

Specific simplifications

1.2.4.28. The simplifications allowed for when calculating the SCR should in general carry over to the calculation of the risk margin.

Simplifications for individual shock scenarios (level 2 of the hierarchy)

1.2.4.29. A more sophisticated approach to the simplifications would be to focus on the individual shock scenarios in order to approximate the individual risks and/or sub-risks covered by the relevant shock scenarios.

1.2.4.30. In practice this would require that the participating insurer look closer at the risks and sub-risks being relevant for the following shock scenarios:

- Life underwriting risk;
- Counterparty default risk with respect to ceded reinsurance and SPVs; and
- Market risk,

in order to investigate to what extent the calculations could be simplified or approximated.

1.2.4.31. In the following paragraphs some proposals for such simplifications are put forward and the main aspects of the simplifications are briefly explained.

Counterparty default risk

1.2.4.32. The counterparty default risk charge with respect to reinsurance ceded can be calculated directly from the definition for each segment and each year. If the exposure to the default of the reinsurers does not vary considerably throughout the development years, the risk charge can be approximated by applying reinsurers' share of best estimates to the level of risk charge that is observed in year 0.

1.2.4.33. According to the standard formula, counterparty default risk for reinsurance ceded is assessed for the whole portfolio instead of separate segments. If the risk of default in a segment is deemed to be similar to the total default risk in a segment is deemed to be similar to the total default risk or if the default risk in a segment is of negligible importance then the risk charge can be arrived at by applying the reinsurers' share of best estimates to the level of the total capital charge for reinsurers' default risk in year 0.

Simplifications for the overall SCR for each future year (level 3 of the hierarchy)

1.2.4.34. A representative example of a simplification belonging to level 3 of the hierarchical structure outlined in these specifications is based on an assumption that the future SCRs are proportional to the best estimate technical provisions for the relevant year – the proportionality factor being the ratio of the present SCR to the present best estimate technical provisions (as calculated for the reference insurer).

1.2.4.35. According to this representative example of the proportional method, the reference insurer's SCR for year *t* is fixed in the following manner:

$$SCR_{RI}(t) = \frac{SCR_{RI}(0) \cdot BE_{Net}(t)}{BE_{Net}(0)}, \qquad t = 1,2,3, \ldots$$

Where:

- $SCR_{RI}(0)$ is the SCR as calculated at time *t=0* for the reference insurer's portfolio of (re)insurance obligations;
- $BE_{Net}(0)$ is the best estimate technical provisions net of reinsurance as assessed at time *t=0* for the insurer's portfolio of (re)insurance obligations; and

- $BE_{Net}(t)$ is the best estimate technical provisions net of reinsurance as assessed at time *t* for the insurer's portfolio of (re)insurance obligations.

1.2.4.36. This simplification takes into account the maturity and the run-off pattern of the obligations net of reinsurance. However, the assumptions on which the risk profile linked to the obligations is considered unchanged over the years, are indicatively the following:

- The composition of the sub-risks in life underwriting risk is the same (life underwriting risk);
- The average credit standing of reinsurers and SPVs is the same (counterparty default risk);
- The market risk in relation to the net best estimate is the same (market risk); and
- The loss absorbing capacity of technical provisions in relation to the net best estimate is the same (adjustment).

1.2.4.37. An insurer that intends to use this simplification should consider to what extent the assumptions referred to above are fulfilled. If some or all of these assumptions do not hold, the insurer should carry out a qualitative assessment of how material the deviation from the assumptions is. If the impact of the deviation is not material compared to the risk margin as a whole, then the simplification can be used. Otherwise the insurer is encouraged to use a more sophisticated calculation method.

1.2.4.38. The insurer may also be able to apply the simplification in a piece-wise manner across the years. For instance, if the business can be split into sub-lines having different maturities, then the whole run-off period of the obligations could be divided into periods of consecutive years where a proportional calculation method could be used.

1.2.4.39. When using the simplification described in the previous paragraphs, some considerations should be given to the manner in which the best estimate technical provisions net of reinsurance have been calculated. In this context it should be noted that even if the applied gross-to-net techniques may lead to a reasonable figure for the best estimate net of reinsurance, $BE_{Net}(t)$, as compared to the best estimate gross of reinsurance, $BE_{Gross}(t)$, at time *t=0*, this does not necessarily mean that all future estimates of the best estimate net of reinsurance will be equally reliable. In such cases the simplified method sketched above may be biased.

1.2.4.40. Regarding the scenario-based adjustments for the loss absorbing capacity of technical provisions to be taken into account when projecting the future SCRs, it is likely to be (very) difficult to develop reliable scenarios to be applied to these projections. Accordingly, it may in practice be difficult to find other workable solutions than allowing this component to develop in line with the best estimate technical provisions net of reinsurance. The participating insurer should, however, make some assessments of the potential bias caused by this simplification.

1.2.4.41. A simplification similar to the one outlined in the previous paragraphs may also be applied at a more granular level, i.e. for individual shock scenarios. However, it should be noted that the number of calculations to be carried out will in general be proportional to the number of shock scenarios for which this simplification is applied. Moreover, insurers should consider whether a more granular calculation as indicated above will lead to a more accurate estimate of the future SCRs to be used in the calculation of the risk margin.

Estimation of all future SCRs "at once" (level 4 of the hierarchy)

1.2.4.42. A representative example of a simplification belonging to level 4 of the hierarchical structure is using the modified duration of the liabilities in order to calculate the present and all future SCRs in one single step:

$$RM = \left(\frac{CoC}{(1+r_1)}\right) \cdot Dur_{mod}(0) \cdot SCR_{RI}(0)$$

Where:

- $SCR_{RI}(0)$ is the SCR as calculated at time *t=0* for the reference insurer's portfolio of (re)insurance obligations;
- $DUR_{mod}(0)$ is the modified duration of reference insurer's (re)insurance obligations net of reinsurance at *t=0*; and
- CoC is the Cost-of-Capital rate.

1.2.4.43. The simplification takes into account the maturity and the run-off pattern of the obligations net of reinsurance. However it is based on the following simplified assumptions:

- The composition and the proportions of the risks and sub-risks do not change over the years (basic SCR);
- The average credit standing of reinsurer and SPVs remain the same over the years (counterparty default risk);
- The modified duration is the same for obligations net and gross of reinsurance (counterparty default risk);
- The market risk in relation to the net best estimate remains the same over the years (market risk); and
- The loss absorbing capacity of the technical provisions in relation to the net best estimate remains the same over the years (adjustment).

1.2.4.44. An insurer that intends to use this simplification should consider to what extent the assumptions referred to above are fulfilled. If some or all of these assumptions do not hold, the insurer should carry out a qualitative assessment of the materiality of the deviation from the assumptions. If the impact of the deviation is not material compared to the risk margin as a whole, then the simplification can be used. Otherwise the insurer should either adjust the formula appropriately or is encouraged to use a more sophisticated calculation.

1.2.4.45. Where $SCR_{RI}(0)$ includes material sub-risks that will not exist over the whole lifetime of the portfolio, for example market risk, the calculation can often be improved by:

- Excluding these sub-risks from $SCR_{RI}(0)$ for the above calculation;
- Calculating the contribution of these sub-risks to the risk margin separately; and
- Aggregating the results (where practicable allowing for diversification).

A simple method based on percentages of the best estimate (level 5 of the hierarchy)

1.2.4.46. According to this simplification the risk margin, $CoCM$, should be calculated as a percentage of the best estimate technical provisions net of reinsurance (at *t=0*), that is:

$$CoCM = \alpha_{lob} \cdot BE_{Net}(0)$$

Where:

- $BE_{Net}(0)$ is the best estimate technical provisions net of reinsurance as assessed at time *t=0* for the insurer's portfolio of (re)insurance obligations; and
- α_{lob} is a fixed percentage to be used for a given line of business, the insurer should take into account that this percentage is likely to increase if the modified duration of the insurance liabilities – or some other measure of the run-off pattern of these liabilities – increases.

1.2.4.47. Insurers should give due consideration to the very simplistic nature of this approach, and it should be used only where it has been demonstrated that none of the more sophisticated risk margin approaches in the above hierarchy can be applied.

1.2.4.48. When insurers rely on this method for the calculation of the risk margin, they will need to justify and document the rationale for the percentages used by line of business. This justification and rationale should consider any specific characteristics of the portfolios being assessed. Insurers should not use this method when negative best estimate values exist.

1.2.5. Discounting

For currencies where the relevant risk-free interest rate term structures are provided

1.2.5.1. For liabilities expressed in currencies listed in 2.6.8.11, we will provide insurers with a complete risk-free interest rate term structure derived from the relevant swap yield curve, if available.

1.2.5.2. For durations less than one year, the annual discount rate is the same as the one year rate.

1.2.5.3. For a given currency and valuation date, each insurer should use the same relevant risk-free interest rate term structure.

1.2.5.4. Investment expenses should be allowed for in the cash flows underlying the calculation of technical provisions and not in the risk-free interest rates used to discount technical provisions.

For currencies where the relevant risk-free interest rate term structure is not provided

1.2.5.5. Where for a certain currency, the risk-free interest rate term structure is not provided, insurers should discuss the approach to take with the FSA at the earliest possible opportunity.

1.2.6. Proportionality

Introduction

1.2.6.1. This subsection aims at providing a description of the way proportionality should be approached in the context of a valuation of technical provisions, to ensure that actuarial and statistical methodologies applied are proportionate to the nature, scale and complexity of the underlying risks.

Requirements for application of proportionality principle

Selection of valuation methodology

1.2.6.2. Insurers shall use methods to calculate technical provisions which are proportionate to the nature, scale and complexity of the risks underlying their insurance and reinsurance obligations.

1.2.6.3. In determining whether a method of calculating technical provisions is proportionate, insurers shall carry out an assessment which includes:

1) An evaluation of the nature, scale and complexity of the risks underlying their insurance and reinsurance obligations;
2) An evaluation in qualitative or quantitative terms of the error introduced in the results of the method due to any deviation between the following:
   a) The assumptions underlying the method in relation to the risks;
   b) The results of the assessment referred to in point 1).

1.2.6.4. The assessment referred to in point 1) in paragraph 1.2.6.3 above shall include all risks which affect the amount, timing or value of the cash in- and out-flows required to settle the insurance and reinsurance obligations over their lifetime. For the purpose of the calculation of the risk margin, the assessment shall include all risks as referred to in 1.2.4.3 over the lifetime of the underlying insurance and reinsurance obligations. The assessment shall be restricted to the risks that are relevant to that part of the calculation of technical provisions to which the method is applied.

1.2.6.5. A method shall not be considered to be proportionate to the nature, scale and complexity of the risks if the error referred to in point 2) of paragraph 1.2.6.3 above is material, unless:

1) No other method with a smaller error is available and the method is not likely to result in an underestimation of the amount of technical provisions; or
2) The method leads to an amount of technical provisions of the insurer which is higher than the amount that would result from using a proportionate method; and the method does not lead to an underestimation of the risk inherent in the insurance and reinsurance obligations that it is applied to.

1.2.6.6. The error referred to in point 2) of paragraph 1.2.6.3 above shall be considered to be material if it leads to a misstatement of technical provisions or their components that could influence the decision-making or judgement of the intended user of the information relating to the value of technical provisions.

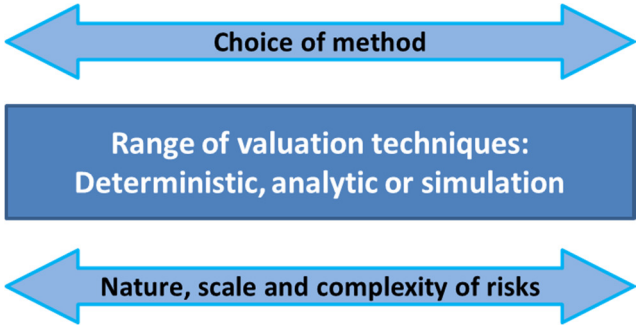
1.2.6.7. The principle of proportionality requires that the insurer should be allowed to choose and apply a valuation method which is:

1) Suitable to achieve the objective of deriving a market-consistent valuation according to the principles underlying the valuation for solvency purposes; but
2) Not more sophisticated than is needed in order to reach this objective (proportionate to the nature, scale and complexity of the risks).

1.2.6.8. This does not, however, mean that an application of the principle of proportionality is restricted to small and medium-sized insurers, nor does it mean that size is the only relevant factor when the principle is considered. Instead, the individual risk profile should be the primary guide in assessing the need to apply the proportionality principle.

Selection of valuation methodology

1.2.6.9. The principle of proportionality applies generally when a valuation methodology is chosen, allowing insurers and reinsurers the flexibility to select a technique which is proportionate to the nature, scale and complexity of the underlying risks:



Proportionality assessment – a three step process

1.2.6.10. It would be appropriate for such an assessment to include the following three steps:

1) Assess the nature, scale and complexity of underlying risks;
2) Check whether the valuation methodology is proportionate to risks as assessed in Step 1), having regard to the degree of model error resulting from its application;
3) Back test and validate the assessments carried out in Steps 1) and 2).

Step 1) – Assessment of the nature, scale and complexity of risks

1.2.6.11. In this step, insurers and reinsurers should assess the nature, scale and complexity of the risks underlying the insurance obligations. This is intended to provide a basis for checking the appropriateness of specific valuation methods carried out in Step 2) and should serve as a guide to identify where simplified methods are likely to be appropriate.

Which risks?

1.2.6.12. The scope of risks which should be included in the analysis will depend on the purpose and context of the assessment. For the purpose of calculating technical provisions, the assessment should include all risks which materially affect (directly or indirectly) the amount or timing of cash flows required to settle the insurance and reinsurance obligations arising from the insurance contracts in the portfolio to be valued. Whereas this will generally include all insured risks, it may also include others such as inflation.

Nature and complexity

1.2.6.13. The nature and the complexity of risks are closely related and, for the purposes of an assessment of proportionality, could best be characterised together. Indeed, complexity could be seen as an integral part of the nature of risks, which is a broader concept, i.e. whether or not a risk is complex can be seen as a property of the risk which is part of its nature.

1.2.6.14. In mathematical terms, the nature of the risks underlying the insurance contracts could be described by the probability distribution of the future cash flows arising from the contracts. This encompasses the following characteristics:

- The degree of homogeneity of the risks;
- The variety of different sub-risks or risk components of which the risk is comprised;
- The way in which these sub-risks are interrelated with one another;
- The level of certainty, i.e. the extent to which future cash flows can be predicted;[3]
- The nature of the occurrence or crystallisation of the risk in terms of frequency and severity;
- The nature of the development of claims payment over time;
- The extent of potential policyholder loss, especially in the tail of the claims distribution;
- The type of business from which the risks originate, i.e. direct business or reinsurance business;
- The degree of dependency between different risk types, including the tail of the risk distribution; and
- The risk mitigation instruments applied, if any, and their impact on the underlying risk profile.

[3] This only refers to the randomness (volatility) of the future cash flows. Uncertainty which is related to the measurement of the risk (model and parameter error) is not an intrinsic property of the risk, but dependent on the valuation methodology applied, and will be considered in Step 2) of the proportionality assessment process.

1.2.6.15. The first three bullet points in the previous paragraph are in particular related to the complexity of risks generated by contracts, which in general terms can be described as the quality of being intricate (i.e. of being "entwined" in such a way that it is difficult to separate them) and compounded (i.e. comprising a number of different sub-risks or characteristics).

1.2.6.16. In life insurance, the nature and complexity of the risks would, for example, be impacted by the financial options and guarantees embedded into the contracts (such as surrender or other take-up options), particularly those with profit participation features.

1.2.6.17. Insurers and reinsurers should also seek to identify factors which would indicate the presence of more complex and/or less predictable risks. This would be the case, for example, where:

- The cash flows are highly path-dependent; or
- There are significant non-linear inter-dependencies between several drivers of uncertainty; or
- The cash flows are materially affected by potential future management actions; or
- Risks have a significant asymmetric impact on the value of the cash flows, in particular if contracts include material embedded options and guarantees; or
- The value of options and guarantees is affected by the policyholder behaviour assumed in the model; or
- Insurers or reinsurers use a complex risk mitigation instrument, e.g. a complex non-proportional reinsurance structure; or
- A variety of covers of different nature are bundled in the contracts; or
- The terms of the contracts are complex (e.g. in terms of franchises, participations, or the inclusion and exclusion criteria of cover).

1.2.6.18. The degree of complexity and/or uncertainty of the risks is associated with the level of calculation sophistication and/or level of expertise needed to carry out the valuation. In general, the more complex the risk, the more difficult it will be to model and predict the future cash flows required to settle the obligations arising from the insured portfolio. For example, where losses are the result of interaction of a larger number of different factors, the degree of complexity of the modelling would also be expected to increase.

Scale

1.2.6.19. Assigning a scale introduces a distinction between "small" and "large" risks. Insurers and reinsurers may use a measurement of scale to identify sub-risks where the use of simplified methods would likely be appropriate, provided this is also commensurate with the nature and complexity of the risks.

1.2.6.20. For example, where insurers and reinsurers assess that the impact of inflation risk on the overall risk profile of the portfolio is small, they may consider that an explicit recognition of inflation scenarios would not be necessary. A scale criterion may also be used, for example, where the portfolio to be measured is segmented into different sub-portfolios. In such a case, the relative scale of the individual sub-portfolios in relation to the overall portfolio could be considered.

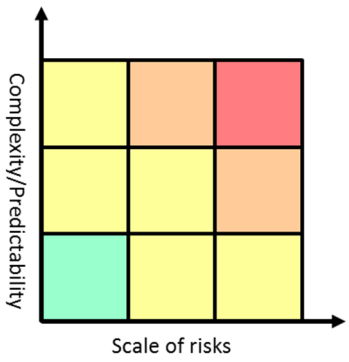
1.2.6.21. Related to this, a measurement of scale may also be used to introduce a distinction between material and non-material risks. Introducing materiality in this context would provide some insurer-specific threshold or cut-off point below which it would be regarded as justifiable to use simplifications for certain risks.

1.2.6.22. Insurers and reinsurers should use an interpretation of scale which is best suited to their specific circumstances and to the risk profile of its portfolio. Nevertheless the assessment of scale should lead to an objective and reliable assessment. To measure the scale of risks, further than introducing an absolute quantification of the risks, insurers and reinsurers will also need to establish a benchmark or reference volume which leads to a relative rather than an absolute assessment. In this way, risks may be considered "small" or "large" relative to the established benchmark. Such a benchmark may be defined, for example, in terms of a volume measure such as premiums or technical provisions that serves as an approximation for the risk exposure.

Contribution of the three indicators and overall assessment

1.2.6.23. The three indicators – nature, scale and complexity – are strongly interrelated, and in assessing the risks the focus should be on the combination of all three factors. This overall assessment of proportionality would ideally be more qualitative than quantitative and cannot be reduced to a simple formulaic aggregation of isolated assessments of each of the indicators.

1.2.6.24. In terms of nature and complexity, the assessment should seek to identify the main qualities and characteristics of the risks, and should lead to an evaluation of the degree of their complexity and predictability. In combination with the "scale" criterion, insurers and reinsurers may use such an assessment as a "filter" to decide whether the use of simplified methods would be likely to be appropriate. For this purpose, it may be helpful to broadly categorise the risks according to the two dimensions "scale" and "complexity/predictability":



1.2.6.25. An assessment of nature, scale and complexity may thus provide a useful basis for the second step of the proportionality process where it is decided whether a specific valuation methodology would be proportionate to the underlying risks.

Step 2) – Assessment of the model error

1.2.6.26. For the best estimate, this means that a given valuation technique should be seen as proportionate if the resulting estimate is not expected to diverge materially from the "true" best estimate which is given by the mean of the underlying risk distribution, i.e. if the model error implied by the measurement is immaterial. More generally, a given valuation technique for the technical provisions should be regarded as proportionate if the resulting estimate is not expected to diverge materially from the current transfer value

1.2.6.27. Where, in the valuation process, several valuation methods turn out to be proportionate, insurers and reinsurers would be expected to select and apply the method which is most appropriate in relation to the underlying risks.

Materiality in the context of a valuation of technical provisions

1.2.6.28. In order to clarify the meaning of materiality, insurers and reinsurer should consider the definition of materiality used in International Accounting Standards (IAS)[4]:

"Information is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the financial statements. Materiality depends on the size of the item or error judged in the particular circumstances of its omission or misstatement. Thus, materially provides a threshold or cut-off point rather than being a primary qualitative characteristic which information must have if it is to be useful."

1.2.6.29. When determining how to address materiality, insurers and reinsurers should have regard to the purpose of the work and its intended users. For a valuation of technical provisions – and more generally for a qualitative or quantitative assessment of risk for solvency purposes – this should include the supervisory authority. Insurers and reinsurers may adjust their assessment of materiality to the particular situation of a quantitative assessment exercise which usually requires a lower degree of accuracy than financial and supervisory reporting.

[4] Materiality is defined in the glossary of the international Accounting Standards Board's "Framework for the Preparation and Presentation of Financial Statements"

1.2.6.30. In ensuring the most appropriate level of granularity in the assessment of materiality, for the purposes of the calculation of technical provisions, the following should be taken into account:

1) There are different levels at which the assessment could be carried out, namely the individual homogeneous risk groups, the individual lines of business or the business of the insurer as a whole;
2) A risk which could be immaterial with regard to the business of the insurer as a whole may still have a significant impact within a smaller segment;
3) Technical provisions should not be analysed in isolation but any effect on own funds and thus on the total balance sheet as well as SCR should be taken into account in the assessment.

Assessment of the uncertainty in the valuation

1.2.6.31. Due to the uncertainty of future events, any modelling of future cash flows (implicitly or explicitly contained in the valuation methodology) will be imperfect, leading to a certain degree of inaccuracy and imprecision in the measurement (or model error). Regardless of what methods should be applied for the valuation of technical provisions, it is important that an assessment of their appropriateness should, in general, include an assessment of the error implicit in the calculations. Where simplified approaches are used to value technical provisions, this could potentially introduce additional uncertainty because they are generally based on some kind of simplifying assumptions regarding the risks which are modelled (e.g. independency of some risks, proportionality between different risk-factors, neglecting future development, etc.).

1.2.6.32. Insurers and reinsurers are not required to specify the precise amount of the error, which in practice could be difficult. Hence insurers and reinsurers are not required to re-calculate the value of its technical provisions using a more complex method in order to demonstrate that the difference between the result of the chosen method and the result of a more complex method is immaterial. Instead, it is sufficient if there is reasonable assurance that the error implied by the application of the chosen method (and hence the difference between those two amounts) is immaterial.

1.2.6.33. Such an assessment of the error may be carried out by expert judgement or by more sophisticated approaches, for example:

- Sensitivity analysis in the framework of the applied model:
  Vary the parameters and/or the data thereby observing the range where a best estimate might be located;
- Comparison with the results of other methods:
  Apply different methods to give insight to potential model errors. These methods would not necessarily need to be more complex;
- Descriptive statistics
  In some cases the applied model allows the derivation of descriptive statistics on the estimation error contained in the estimation.[5] Such information may assist in quantitatively describing the sources of uncertainty;

- Back-testing

  Compare the results of the estimation against experience which may help to identify systemic deviations due to deficiencies in the modelling;
- Quantitative assessment scenario as benchmark.

Approach in cases where error is expected to be material

1.2.6.34. Where the intended use of a valuation technique is expected to lead to a material degree of error, insurers and reinsurers should, where feasible, apply a more appropriate valuation method among the alternatives available.

1.2.6.35. Where it is unavoidable for insurers and reinsurers to use a valuation method which leads to a material error, the insurer or reinsurer should document this and consider the implications with regard to the reliability of the valuation and their overall solvency position.

1.2.6.36. In particular, insurers and reinsurers should assess whether a material level of error is adequately addressed in the determination of the SCR and the setting of the risk margin in the technical provisions.

1.2.6.37. Where the use of a valuation technique results in a material increase in the level of uncertainty associated with the best estimate valuation. However, this exercise of caution should not lead to a deliberate overstatement of the best estimate provision. To avoid a double-counting of risks, the valuation of the best estimate should be free of bias and should not contain any additional margin of prudence.

Possible simplifications for life insurance

Biometric risk factors

1.2.6.38. Biometric risk factors are underwriting risks covering any of the risks related to human life conditions, e.g.

- Mortality/longevity rate;
- Morbidity rate;
- Disability rate.

[5] This would not include the uncertainty arising from a miss-specification of the model itself.

1.2.6.39. The list of possible simplifications for obtaining biometric risk factors, which does not include all simplifications allowed and which could be used in combination, includes:

- Neglect the expected future changes in biometrical risk factors, e.g. the simplification could be applied to short term contracts;
- Assume that biometric risk factors are independent from any other variable (i.e. mortality is independent of future changes of morbidity status of policyholder);
- Use cohort or period data to analyse biometric risk factors;
- Apply current tables in use adjusted by a suitable multiplier function. The construction of reliable mortality, morbidity/disability tables and the modelling of trends could be based on current (industry standard or other) tables in use, adjusted by a suitable multiplier function. Industry-wide and other public data and forecasts should provide useful benchmarks for suitable multiplier functions.

Surrender option

1.2.6.40. Besides the rational or irrational behaviour of policyholders, the experience of surrenders tends to suggest that rational reasons for movements in surrender rates could include:

- Quality of sales advice and whether any misspelling may occur, leading to earlier surrenders in excess of later surrenders;
- The economic cycle affecting policyholders' ability to pay further premiums;
- The personal circumstances of policyholders and whether they can afford premiums.

1.2.6.41. A non-exhaustive list of possible simplifications for modelling surrender rates, which could be used in combination, includes:

- Assume that surrenders occur independently of financial/economic factors;
- Assume that surrenders occur independently of biometric factors;
- Assume independency in relation to management actions;
- Assume that surrenders occur independently of the insurer-specific information;
- Use a table of surrender rates that are differentiated by factors such as age, time since policy inception, product type, …;
- Model the surrender as a hazard process either with a non-constant or constant intensity.

Financial options and guarantees

Investment guarantees

1.2.6.42. The non-exhaustive list of possible simplifications for calculating the values of investment guarantees includes:

- Assume non-path dependency in relation to management actions, regular premiums, cost deductions (e.g. management charges, etc.);
- Use of representative deterministic assumptions of the possible outcomes for determining the intrinsic values of extra benefits;
- Assume deterministic scenarios for future premiums (when applicable), mortality rates, expenses, surrender rates, etc.;
- Apply formulaic simplified approach for the time values if they are not considered to be material.

Other options and guarantees

1.2.6.43. The possible simplification for other options and guarantees are:

- Ignore options and guarantees which are not material;
- Group, for instance, guaranteed expense charge and/or guaranteed mortality charge with investment guarantee and approximate them as one single investment guarantee;
- Use the process outlined in the previous paragraph in the absence of other valuations approaches, if appropriate.

Distribution of future discretionary benefits

1.2.6.44. Possible simplifications for determining the future bonuses may include, where appropriate:

- Assume that economic conditions will follow a certain pattern, not necessarily stochastic, appropriately assessed;
- Assume that the business mix of insurers' or reinsurers' portfolios will follow a certain pattern, not necessarily stochastic, appropriately assessed.

1.2.6.45. Insurers and reinsurers could use all or some of the simplifications proposed in the previous paragraph to determine amounts of future discretionary bonuses, or approximate the amount of available extra benefits for distribution to policyholders as the difference (or appropriate percentage of the difference) between the value of the assets currently held to back insurance liabilities of these contracts and the technical provisions for these contracts, without taking into account future discretionary bonuses.

1.2.6.46. A possible simplification for distribution of extra benefits to a particular line of business (to each policy) is to assume a constant distribution rate of extra benefits.

Expenses and other charges

1.2.6.47. A possible simplification for expenses is to use an assumption built on simple models, using information from current and past expense loadings, to project future expense loadings, including inflation.

1.2.6.48. Possible simplifications for other charges are to assume that:

- Other charges are a constant share of extra benefits; or
- A constant charge (in relative terms) from the policy fund.

Other issues

1.2.6.49. Having in mind the wide range of assumptions and features taken into account to calculate life insurance best estimates, there are other areas not mentioned previously where it might be possible to use methods meeting the requirements set out in these specifications to apply simplifications.

1.2.6.50. Another possible simplification for the payments of premiums which also include lapses and premium waivers (e.g. premium waivers in case of disability of the insured person) is to assume that future premiums are paid independently of the financial markets and insurers' or reinsurers' specific information. If lapses and premiums waivers could not be treated as independent of financial markets or insurer specific parameters, then lapses should be valued with similar techniques as those for surrender options or investment guarantees.

1.2.6.51. As a further example, possible simplifications in relation to fund/account value projections (which is important for valuing financial options and guarantees) are to:

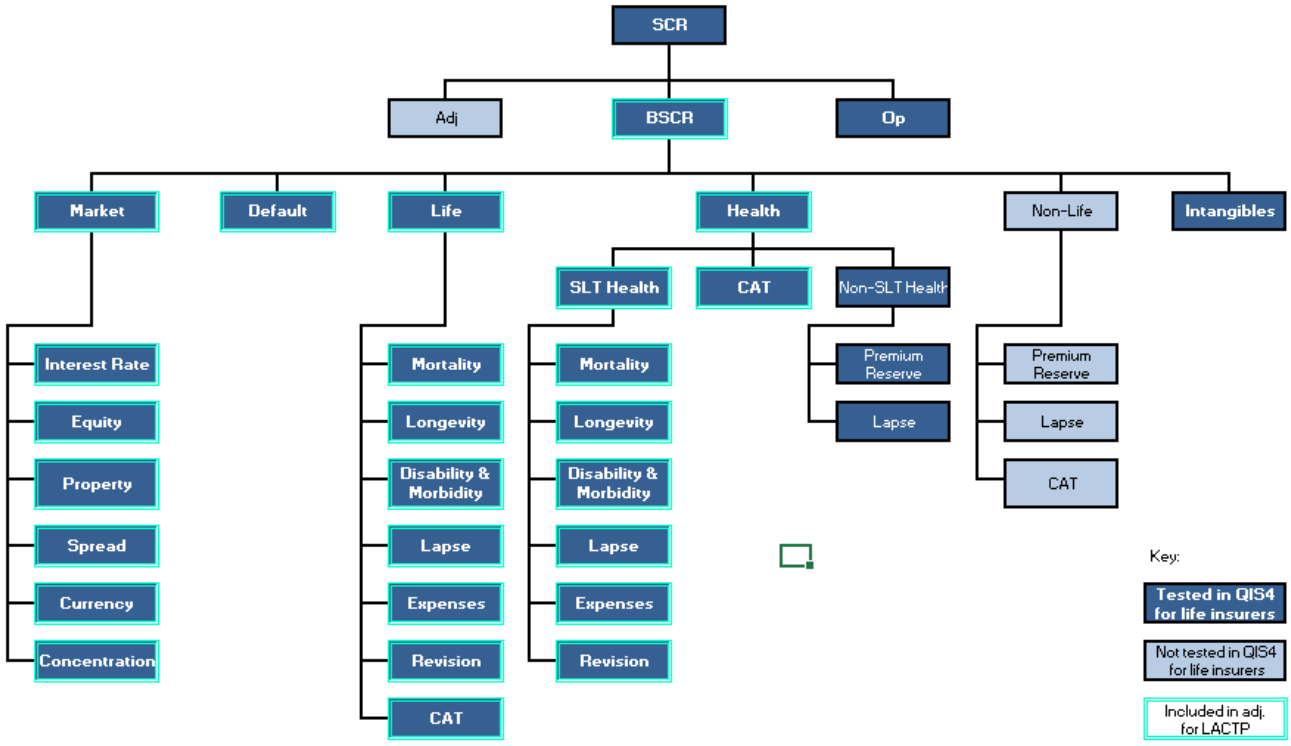
- Group assets with similar features/use representative assets or indexes;
- Assume independency between assets, for instance, between equity rate of return and interest rate.

2. Solvency Capital Requirement – Standard Formula

2.1. Overall structure of the solvency capital requirement

Overview

2.1.1.1. The calculation of the Solvency Capital Requirement (SCR) according to the standard formula is divided into the risks and sub-risks set out in the diagram below. The diagram also shows which risks and sub-risks are included in the QIS4 exercise.



2.1.1.2. For each risk or sub-risk, the specifications are split into the following sub-sections:

- Description – defines the scope of the shock scenario(s) used to assess the capital requirement for the sub-risk, and gives a definition of the relevant sub-risk;
- Capital Requirement – this sets out the shock scenario(s) and how the outcome is calculated;
- Simplification – this sets out how the calculation can be simplified under certain conditions (this subsection is only included where simplified calculations are envisaged);
- Sensitivities – for some sub-risks we are testing a number of alternative approaches or parameters, and this section sets these out.

Technical provisions in the SCR standard formula calculations

2.1.1.3. For the purposes of the SCR standard formula calculation, technical provisions should be valued in accordance with the specifications laid out in Section 1. To avoid circularity in the calculation, any reference to technical provisions within the calculations for the individual SCR shock scenarios is to be understood to exclude the risk margin.

Scenario-based calculations

2.1.1.4. For several risks, the calculation of the capital requirement is scenario-based, i.e. the capital requirement is determined as the impact of a specified shock scenario on the level of Basic Own Funds (BOF).

2.1.1.5. The level of Basic Own Funds is defined as the difference between assets and liabilities, where the liabilities should not include subordinated liabilities. The change of BOF resulting from the scenario is referred to as ΔBOF, where this is defined to be positive if the scenario results in a loss of BOF.

2.1.1.6. The scenario should be interpreted in the following manner:

- The recalculation of technical provisions to determine the change in BOF should allow for any relevant adverse changes in option take-up behaviour of policyholders under the scenario;
- Where risk mitigation techniques meet requirements set out in subsections 2.12 – 'Financial Risk Mitigation' and 2.14 – 'Insurance Risk Mitigation', their risk-mitigating effect should be taken into account in the analysis of the scenario;
- Where the scenario results in an increase of BOF, and therefore does not reflect a risk for the insurer, this should not lead to a 'negative capital requirement'. The corresponding capital requirement in such a situation is set to a floor of nil.

2.1.1.7. Future management actions should be taken into account in the shock scenario calculations in the following manner:

- To the extent that the scenario stress under consideration is considered to be an instantaneous stress, no management actions may be assumed to occur during the stress;
- However, it may be necessary to reassess the value of the technical provisions after the stress. Assumptions about future management actions may be taken into account at this stage. The approach taken for the recalculation of the best estimate to assess the impact of the stress should be consistent with the approach taken in the initial valuation of the best estimate;
- Any assumptions regarding future management actions for the assessment of the standard formula SCR should be objective, realistic and verifiable. They should also be clearly documented and have been approved by the Appointed Actuary, where necessary, and the Board. Guidance on these requirements can be found in subsection 1.2.3

Treatment of new business in the standard formula

2.1.1.8. Insurers should not include new business in any of the shock scenarios when determining ΔBOF.

Proportionality and simplifications

2.1.1.9. The principle of proportionality is intended to support the consistent application of the principles-based solvency requirements to all insurers.

2.1.1.10. Insurers and reinsurers may apply to several parts of the standard formula calculation specified simplifications, provided that the simplified calculation is proportionate to the nature, scale and complexity of the risks inherent in the business.

2.1.1.11. In assessing whether a simplified calculation could be considered proportionate to the underlying risks, the insurer should have regard to the following steps:

Step 1) – Assessment of the nature, scale and complexity

2.1.1.12. The insurer or reinsurer should assess the nature, scale and complexity of the risks. This is intended to provide a basis for checking the appropriateness of specific simplifications carried out in the subsequent step.

Step 2) – Assessment of the model error

2.1.1.13. In this step the insurer or reinsurer should assess whether a specific simplification can be regarded as proportionate to the nature, scale and complexity of the risks analysed in the first step.

2.1.1.14. Where simplified approaches are used to calculate the SCR, this could introduce additional estimation uncertainty (or model error). The higher the estimation uncertainty, the more difficult it will be for the insurer to rely on the estimation and to ensure that it is suitable to achieve the calibration objective of the SCR.

2.1.1.15. Therefore the insurer should assess the model error that results from the use of a given simplification, having regard to the nature, scale and complexity of the underlying risks. The error should be identified by evaluating (in quantitative or qualitative terms) the deviation between the nature, scale and complexity of the risk, and the assumptions underlying the simplified calculation. A simplified calculation should not be considered to be proportionate if the error is material, unless the simplified calculation leads to a Solvency Capital Requirement which exceeds the Solvency Capital Requirement that results from the standard calculation. The error should be considered to be material if it leads to a misstatement of the Solvency Capital Requirement that could influence the decision-making or the judgement of the user of the information relating to the Solvency Capital Requirement.

2.1.1.16. Insurers and reinsurers are not required to quantify the degree of model error in quantitative terms, or to re-calculate the value of the capital requirement using a more accurate method in order to demonstrate that the difference between the result of the chosen method and the result of a more accurate method is immaterial. Instead, it is sufficient if there is reasonable assurance that the model error included in the simplification is immaterial.

2.2. SCR calculation structure

2.2.1. The Solvency Capital Requirement

2.2.1.1. The SCR as calculated by the standard formula approach is determined as follows:

$$SCR = \sqrt{BSCR^2 + BSCR \cdot SCR_{op\_UL} + SCR_{op\_UL}^2} + Adj + SCR_{op\_nonUL}$$

Where:

- SCR is the overall standard formula Solvency Capital Requirement;
- $BSCR$ is the Basic Solvency Capital Requirement;
- Adj is the adjustment for the risk-absorbing effect of technical provisions and deferred taxes;
- SCR_{op_UL} is the operational risk SCR in respect of life insurance contracts where the investment risk is borne by the policyholders;
- SCR_{op_nonUL} is the operational risk SCR for all other lines of business.

2.2.2. The Basic Solvency Capital Requirement

2.2.2.1. The BSCR is the Solvency Capital Requirement before any adjustments and combines capital requirements for five major risk categories:

- SCR_{market} is the capital requirement for market risk;
- $SCR_{default}$ is the capital requirement for counterparty default risk;
- SCR_{life} is the capital requirement for life underwriting risk;
- SCR_{health} is the capital requirement for health underwriting risk;
- $SCR_{intangibles}$ is the capital requirement for intangible assets risk.

2.2.2.2. The BSCR is determined as follows:

$$BSCR = \sqrt{\sum_{r,c} Corr_{r,c} \cdot SCR_r \cdot SCR_c} + SCR_{intangibles}$$

Where:

$Corr_{r,c}$ are the entries of the correlation matrix $Corr$;

- SCR_r and SCR_c are the capital requirements for the individual SCR risks according to the rows and columns of the correlation matrix $Corr$;
- $SCR_{intangibles}$ is the capital requirement for intangible asset risk, calculated in accordance with 2.5;

- $Corr$ is defined as:

$Corr$	Market	Default	Life	Health
Market	1	0.25	0.25	0.25
Default	0.25	1	0.25	0.25
Life	0.25	0.25	1	0.25
Health	0.25	0.25	0.25	1

2.2.2.3. The net BSCR is determined as follows:

$$nBSCR = \sqrt{\sum_{r,c} Corr_{r,c} \cdot nSCR_r \cdot nSCR_c} + SCR_{intangibles}$$

2.3. Loss absorbing capacity of technical provisions and deferred taxes

2.3.1. Definition of future discretionary benefits

2.3.1.1. For the definition of future discretionary benefits see subsection 1.2.3.

2.3.2. Gross and net SCR calculations

2.3.2.1. The solvency capital requirement for each risk should be derived under a gross and a net calculation.

2.3.2.2. The gross calculation should be used to determine the Basic Solvency Capital Requirement and in the calculation of the adjustment for the loss-absorbing capacity of technical provisions. In the calculation of the adjustment, the result of the gross calculation is used to prevent double counting of risk mitigating effects in the modular approach. Moreover it is an additional source of information about the risk profile of the insurer. The gross calculation does not reflect all aspects of the economic reality as it ignores the risk-mitigating effect of future discretionary benefits.

2.3.2.3. When calculating the gross Basic Solvency Capital Requirement, insurers and reinsurers should base the calculation on the following requirements:

- The value of cash flows related to future discretionary benefits remains unchanged under the relevant scenario;
- Where the relevant scenario affects the risk free interest rate term structure (especially the stress on the interest rate level) only the cash flows relating to guaranteed benefits should be rediscounted. The cash flows relating to future discretionary benefits should be discounted using the unstressed risk free interest rate term structure.

2.3.3. Calculation of the adjustment for loss absorbing capacity of technical provisions and deferred taxes

2.3.3.1. The calculation of the adjustment for the loss-absorbing capacity of technical provisions and deferred taxes should ensure that there is no double counting of the risk mitigating effect provided by future discretionary benefits or deferred taxes.

2.3.3.2. A modular approach for the calculation of the adjustment for the loss absorbing capacity of technical provisions and deferred taxes should be used.

2.3.3.3. The adjustment for the loss-absorbing capacity of technical provisions and deferred taxes is split into two parts as follows:

$$Adj = Adj_{TP} + Adj_{DT}$$

Where:

- Adj_{TP} is the adjustment for loss absorbing capacity of technical provisions;
- Adj_{DT} is the adjustment for the loss absorbing capacity of deferred taxes.

2.3.3.4. The adjustment for the loss absorbing capacity of technical provisions and deferred taxes should be positive.

Adjustment for loss absorbing capacity of technical provisions

2.3.3.5. The solvency capital requirement for each risk should be calculated both gross and net of the loss absorbing capacity of technical provisions.

2.3.3.6. The Basic Solvency Capital Requirement ($BSCR$) should be calculated by aggregating the gross capital requirements (for example $Market_{interest}$) using the relevant correlation matrices.

2.3.3.7. The net Basic Solvency Capital Requirement ($nBSCR$) should be calculated by aggregating the net capital requirements (for example $nMarket_{interest}$) using again the relevant correlation matrices.

2.3.3.8. The adjustment to the Basic SCR for the loss absorbing capacity of technical provisions should then be determined by comparing $BSCR$ with $nBSCR$. The absolute amount of the adjustment should not exceed the total value of the technical provisions without risk margin in relation to future discretionary benefits:

$$Adj_{TP} = -\max(0; \min(BSCR - nBSCR; FDB))$$

2.3.3.9. The net Basic Solvency Capital Requirement shall be calculated in accordance with 2.3.2 with the following modifications:

1) Where the calculation of a shock scenario of the Basic Solvency Capital Requirement is based on the impact of a scenario on the basic own funds of insurers and reinsurers, the scenario can change the value of the future discretionary benefits included in technical provisions;

2) The scenario based calculations of the life underwriting risk, the market risk and the counterparty default risk shock scenarios as well as the scenario based calculation set out in points 3) and 4) shall take into account the impact of the scenario on future discretionary benefits included in technical provisions; this shall be done on the basis of assumptions on future management actions that comply with the relevant sections on valuation of technical provisions 1.2.3.83 - 1.2.3.89 and 1.2.3.109 - 1.2.3.118;
3) Insurers should determine the capital requirement for counterparty default risk including the risk absorbing capacity of technical provisions, $nSCR_{default}$, as the loss in net asset value resulting from a counterparty default loss of the amount $SCR_{default}$ (as defined in Section 2.7). The result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that insurers are able to vary their assumptions in future bonus rates in response to the shock being tested (subject to 1.2.3.83 - 1.2.3.89 and 1.2.3.109 - 1.2.3.118);
4) Where insurers and reinsurers use a simplified calculation for a specific capital requirement, the insurers and reinsurers shall base the calculation on capital requirement that is equal to the loss in basic own funds that would result from an instantaneous loss of the amount of the capital requirement before allowance for the loss absorbing capacity of technical provisions, and shall assume that the instantaneous loss is due to the risk that the capital requirement captures. The result of the scenario should be determined assuming that the value of future discretionary benefits can change and that insurers are able to vary their assumptions in future bonus rates in response to the shock being tested (subject to 1.2.3.83 - 1.2.3.89 and 1.2.3.109 - 1.2.3.118) ;

   For the purpose of point 2), insurers and reinsurers shall take into account any legal, regulatory or contractual restrictions in the distribution of future discretionary benefits.

2.3.3.10. The calculation of the gross Basic Solvency Capital Requirement within a shock scenario can also be based on the net Basic Solvency Capital Requirement. For this purpose, insurers should carry out the following steps:

1) Calculate a stressed regulatory balance sheet under the scenario in the shock scenario concerned;
2) Determine the difference between the best estimate value of the technical provisions relating only to future discretionary benefits derived from the unstressed balance sheet that was used to calculate own funds and the corresponding value of future discretionary benefits from the stressed economic balance sheet;
3) Add this difference to the net Basic Solvency Capital Requirement.

Adjustment for loss absorbing capacity of deferred taxes

2.3.3.11. The adjustment for the loss-absorbing capacity of deferred taxes should be equal to the change in the value of deferred taxes of insurers or reinsurers that would result from an instantaneous loss of an amount that is equal to the following amount:

$$SCR_{shock} = BSCR + Adj_{TP}$$

Where:

- $BSCR$ is the Basic SCR;
- Adj_{TP} is the adjustment for the loss absorbing capacity of technical provisions.

2.3.3.12. For the purpose of this calculation, the value of deferred taxes should be calculated as set out in section 1. Where a loss of the SCR_{shock} would result in the increase of deferred tax assets, insurers and reinsurers should take into account the magnitude of the loss and its impact on the insurer's or reinsurer's current and financial situation when assessing whether it is probable that future taxable profits will be available against which the deferred tax asset can be utilised in accordance with section 1.

2.3.3.13. For the purpose of this calculation, a decrease in deferred tax liabilities or an increase in deferred tax assets should result in a negative adjustment for the loss-absorbing capacity of deferred taxes.

2.3.3.14. Where the calculation of the adjustment results in a positive change of deferred taxes, the adjustment shall be nil.

2.3.3.15. Insurers and reinsurers should calculate the adjustment for deferred taxes in accordance with the valuation principles as set out in section 1. Those principles require the calculation of the adjustment for the loss absorbing capacity of deferred taxes by stressing the regulatory balance sheet and determining the consequences on the insurer's or reinsurer's tax figures. The deferred tax adjustment should then be calculated on the basis of temporary differences between the stressed figures and the corresponding figures for tax purposes. Following the principles set out in section 1, deferred taxes should be recognised in relation to all assets and liabilities that are recognised for solvency purposes. Items not recognised for solvency purposes should be valued at zero.

2.3.3.16. If insurers or reinsurers do not set up a stressed economic balance sheet, a calculation with methods based on average tax rates can be considered appropriate as well, if demonstrated that this approach avoids material misstatement of the adjustment.

2.3.3.17. Insurers and reinsurers should ensure that the calculation of the loss absorbing capacity of deferred taxes is performed at a level of granularity that reflects all material relevant regulations of all applicable tax regimes.

2.3.3.18. Where it is necessary to allocate the loss SCR_{shock} to its causes in order to calculate the adjustment for the loss absorbing capacity of deferred taxes, insurers or reinsurers should allocate the loss to the risks that are captured by the BSCR. The allocation should be consistent with the contribution of the shock scenarios of the standard formula to the BSCR. The level of granularity of loss allocation should be sufficient to allow for all material relevant regulations of applicable tax regimes to be taken into account.

Adjustment for loss absorbing capacity of notional deferred taxes: Recognition

2.3.3.19. Insurers and reinsurers shall recognise and value deferred taxes in relation to all assets and liabilities, including technical provisions that are recognised for solvency or tax purposes in conformity with international accounting standards.

2.3.3.20. Insurers and reinsurers shall value deferred taxes, other than deferred tax assets arising from the carry-forward of unused tax credits and the carry-forward of unused tax losses, on the basis of the difference between the values ascribed to assets, technical provisions and other liabilities recognised in accordance with this technical specification and the values ascribed to assets and liabilities as recognised and valued for tax purposes.

2.3.3.21. Insurers and reinsurers shall only ascribe a positive value to deferred tax assets where it is probable that future taxable profit will be available against which the deferred tax asset can be utilised, taking into account any legal or regulatory requirements on the time limits relating to the carry-forward of unused tax losses or the carry-forward of unused tax credits. When assessing whether the insurer or reinsurer has sufficient taxable profits to cover any net deferred tax assets, the insurer should assess the impact of the (national) tax regime on valuation and recognition of temporary differences.

2.3.3.22. Insurers and reinsurer should recognise notional deferred tax assets conditional on their temporary nature. The recognition should be based on the extent to which offsetting is permitted according to the relevant tax regimes, which may include offset against past tax liabilities, or current or likely future tax liabilities.

2.3.3.23. Where an approach based on average tax rates is employed, insurers or reinsurers should ensure that deferred tax liabilities in the unstressed regulatory balance sheet are not double counted for the purpose of recognition. They can either support recognition of deferred tax assets in the unstressed regulatory balance sheet, or additional deferred tax assets in the SCR calculation, but not both. Hence, the recognition of notional deferred tax assets cannot be supported by deferred tax assets in the balance sheet for valuation purposes.

2.3.3.24. These restrictions should be implicit if a stressed regulatory balance sheet is set up. The recognition of deferred tax assets in a stressed regulatory balance sheet should follow the principles set out in section 1.1.

2.3.3.25. Appropriate techniques should be employed to assess the temporary nature of the deferred tax assets and the timing of future taxable profits. The assessment should be undertaken in accordance with section 1.1. Projections should take into account the prospects of the insurer or reinsurer after suffering the instantaneous loss.

2.3.3.26. Where an approach based on average tax rates is employed, insurers and reinsurers should take care that notional tax assets arising from the instantaneous loss cannot be supported by future taxable profits already supporting the recognition of deferred tax assets for valuation purposes.

2.3.3.27. To avoid double counting, future profits for the recognition of deferred tax assets in the regulatory balance sheet should be deducted from the post-stress projections of future profits. Only the remaining amount may be recognised to demonstrate eligibility of the notional deferred tax asset.

2.3.3.28. Where the insurer or reinsurer has entered into contractual agreements regarding the transfer of profit or loss to another entity or is bound by other arrangements under existing tax legislation in the relevant jurisdiction, the insurer's or reinsurer's calculation of the adjustment for loss absorbing capacity of deferred taxes should take these agreements or arrangements into account. Where it is contractually agreed and probable that loss will be transferred to a third party ("receiving entity") after the insurer or reinsurer ("transferring insurer") suffers the instantaneous loss, the related deferred tax adjustment should not be recognised by the transferring insurer except so far as payment or other benefit will be received in exchange for the transfer of notional tax losses. Payments or benefits receivable should only be recognised to the extent that a deferred tax adjustment could be recognised in accordance with 2.3.3.24 if the loss was not transferred. Payment of benefits receivable should only be recognised to the extent that a deferred tax adjustment could be recognised if the contractual or legal arrangement is legally effective and enforceable by the transferring insurer with respect to the transfer of those items. If the value of the payment or benefits receivable is conditional on the SCR or tax position of the receiving entity, the valuation of the payment of benefits receivable should be based on a reliable estimate of the value that is expected to be received in exchange for loss transferred. The transferring insurer should verify that the receiving entity is able to honour its obligations in stressed circumstances, especially after suffering the SCR stress. Any tax payable on the payment of benefit received by the transferring insurer should be reflected in the amount of notional deferred taxes which it recognises.

2.4. SCR Operational Risk

2.4.1. Description

2.4.1.1. Operational risk is the risk of loss arising from inadequate or failed internal processes, from personnel and systems, or from external events. Operational risk should include legal risks but exclude reputational risks as well as risks arising from strategic decisions. The operational risk module is designed to address operational risks to the extent that these have not been explicitly covered in other risk modules.

2.4.2. Capital Requirement

2.4.2.1. The capital requirement for operational risk consists of two elements:

$$SCR_{op\_UL} \text{ and } SCR_{op\_nonUL}$$

- SCR_{op_UL} is the operational risk SCR in respect of life insurance contracts where the investment risk is borne by the policyholders (i.e. line of business 1):

$$SCR_{op\_UL} = EXP_{UL}$$

Where:

- EXP_{UL} is the value of expenses set out in 1.2.3.41 incurred by this line of business in the twelve months prior to the valuation, less type 4) acquisition expenses. To clarify EXP_{UL} should include renewal commission; one-off exercise/development expenses; maintenance expenses, and investment management expenses. Furthermore the expenses should reflect the actual expenses incurred in the previous 12 months, including any overspends.

- SCR_{op_nonUL} is the operational risk SCR for all other lines of business:

$$SCR_{op\_nonUL} = \max(Op_{premiums}, Op_{provisions})$$

Where:

- $Op_{premiums} = 0.04 * Earn_{nonUL} + \max(0, 0.04 * (Earn_{nonUL} - 1.2 * pEarn_{nonUL}))$
- $Earn_{nonUL}$ denotes the premiums earned during the last 12 months for life insurance and reinsurance obligations where the investment risk is not borne by the policyholder, including reinsurance premiums.
- $pEarn_{nonUL}$ denotes the premiums earned during the 12 months prior to the last 12 months for life insurance and reinsurance obligations where the investment risk is not borne by the policyholder, including reinsurance premiums.
- $Op_{provisions} = 0.0045 * max(0, TP_{nonUL})$

- TP_{nonUL} denotes the technical provisions for life insurance and reinsurance obligations where the investment risk is not borne by the policyholder, excluding the risk margin and without deduction of recoverables from reinsurance contracts and SPVs.

2.5. SCR Intangible asset risk

2.5.1. Description

2.5.1.1. Where intangible assets are recognised according to the specifications set out in subsection 1.1, the risks inherent to these items should be considered in the calculation of the SCR.

2.5.1.2. Intangible assets are exposed to two risks:

1) Markets risks, as for other balance sheet items, derived from the decrease of prices in the active market, and also from unexpected lack of liquidity of the relevant active market, that may result in an additional impact on prices, even impeding any transaction;
2) Internal risks, inherent to the specific nature of these elements (e.g. linked to either failures or unfavourable deviations in the process of finalisation of the intangible asset or its amount reduced, risks linked to the commercialisation of the intangible asset, triggered by a deterioration of the public image of the insurer).

2.5.2. Capital Requirement

2.5.2.1. The capital requirement for intangible assets, $SCR_{intangible}$, is calculated as follows:

$$SCR_{intangibles} = 0.8 \cdot IA$$

Where:

- IA is the value of intangible assets according to subsection 1.1.

2.6. Market Risk

2.6.1. Structure of the market risk capital requirement

2.6.1.1. This section covers the risk arising from exposure to market risk, arising from the level or volatility of market prices of financial instruments. Exposure to market risk is measured by the impact of movements in the level of financial variables such as stock prices, interest rates, immovable property prices and exchange rates.

2.6.1.2. The calculations of capital requirements in the market risk section are based on specified scenarios. General guidance about the interpretation of the scenarios can be found in subsection 2.1.

2.6.2. Description

2.6.2.1. The market risk capital requirement is calculated using the input from six shock scenarios that aim to establish the exposure of the participating insurer to interest rate, equity, property, spread, currency and concentration risk.

2.6.2.2. The shock scenarios provide the following information:

- $Market_{interest}$ is the capital requirement for interest rate risk;
- $Market_{equity}$ is the capital requirement for equity risk;
- $Market_{property}$ is the capital requirement for property risk;
- $Market_{fx}$ is the capital requirement for currency risk;
- $Market_{spread}$ is the capital requirement for spread risk;
- $Market_{conc}$ is the capital requirement for risk concentrations;
- $nMarket_{interest}$ is the capital requirement for interest rate risk including the loss absorbing capacity of technical provisions;
- $nMarket_{equity}$ is the capital requirement for equity risk including the loss absorbing capacity of technical provisions;
- $nMarket_{property}$ is the capital requirement for property risk including the loss absorbing capacity of technical provisions;
- $nMarket_{fx}$ is the capital requirement for currency risk including the loss absorbing capacity of technical provisions;
- $nMarket_{spread}$ is the capital requirement for spread risk including the loss absorbing capacity of technical provisions;
- $nMarket_{conc}$ is the capital requirement for risk concentrations including the loss absorbing capacity of technical provisions.

2.6.3. Capital Requirement

2.6.3.1. The capital requirement relating to market risk is calculated by combining the capital requirements listed in 2.6.2.2 using a correlation matrix as follows:

$$SCR_{market} = \sqrt{\sum_{r,c} MarketCorr_{r,c} \cdot Market_r \cdot Market_c}$$

Where:

- $MarketCorr_{r,c}$ are the entries of the correlation matrix $MarketCorr$;
- $Market_r$ and $Market_c$ are the capital requirements for the individual market shock scenarios according to the rows and columns of the correlation matrix $MarketCorr$;

- $MarketCorr$ is defined as:

$MarketCor$	Interest	Equity	Property	Spread	Currency	Conc.
Interest	1	A	A	A	0.25	0
Equity	A	1	0.75	0.75	0.25	0
Property	A	0.75	1	0.5	0.25	0
Spread	A	0.75	0.5	1	0.25	0
Currency	0.25	0.25	0.25	0.25	1	0
Conc.	0	0	0	0	0	1

2.6.3.2. The factor A shall be equal to 0 when the capital requirement for interest rate risk, as determined by paragraph 2.6.5.17, is derived from the capital requirement for the risk of an increase in the interest rate term structure, otherwise, the factor A shall be equal to 0.5.

2.6.3.3. The capital requirement for $nSCR_{market}$ is determined as follows:

$$nSCR_{market} = \sqrt{\sum_{r,c} MarketCorr_{r,c} \cdot nMarket_r \cdot nMarket_c}$$

2.6.4. Look-through approach

Full look through approach

2.6.4.1. In order to properly assess the market risk inherent in collective investment entities and other investments packaged as funds, it will be necessary to examine their economic substance. Wherever possible, and where proportionate, this should be achieved by applying a look-through approach in order to assess the risks applying to the assets underlying the investment vehicle. Each of the underlying assets would then be subjected to the relevant risk stresses.

2.6.4.2. The same look-through approach should also be applied for other indirect exposures to underwriting risk (such as in the case of investments in catastrophe bonds), indirect exposures to counterparty risk and indirect exposures to market risk. Notwithstanding the first sentence, the look-through approach should not be applied to investments in a related entity. The capital charge is capped at the equity value of the investment in cases where the loss is legally limited.

2.6.4.3. For the purposes of 2.6.4.2 a related entity means either a subsidiary of the insurer or another entity in which a participation is held, or an entity linked with another by a relationship that requires the production of consolidated accounts.

Where:

1) A subsidiary is any entity over which a parent company, in the opinion of the FSA, effectively exercises a dominant influence on that entity;

2) A participation is the holding, directly or indirectly, of voting rights or capital in an entity over which, in the opinion of the FSA, a significant influence is effectively exercised.

2.6.4.4. Where a number of iterations of the look-through approach is required (e.g. where an investment fund is invested in other investment funds), the number of iterations should be sufficient to ensure that all material market risk is captured.

2.6.4.5. The above recommendations should be applied to both passively and actively managed funds, such as money market funds.

2.6.4.6. Where external asset management firms may delay publicising the fund composition, affected insurers or reinsurers shall ensure that they are able to access the information required to identify the nature of all underlying assets in line with the requirements to monitor their solvency positions.

Target underlying asset allocation approach

2.6.4.7. Where the full look-through approach cannot be applied or is not proportional, the SCR may be calculated on the basis of the target underlying asset allocation of the collective investment entity or fund, provided such a target allocation is available to the insurer at the level of granularity necessary for calculating the SCR, and the underlying assets are managed according to this target allocation. For the purpose of this calculation for QIS4, data groupings may be used, provided they are applied in a prudent and proportionate manner, compliant with Sections 2.1.1.9 to 2.1.1.16.

Equity type 2 charge approach

2.6.4.8. Where the full look-through approach and target underlying asset allocation approach cannot be applied, the collective investment entity or fund shall be treated as equity type 2. Insurers are asked to discuss this with the FSA, demonstrating why this approach has been used, in advance of submitting the QIS4 results.

2.6.5. Interest Rate Risk

Description

2.6.5.1. Interest rate risk is caused by the sensitivity of the value of any assets, liabilities and financial investments to fluctuations in the term structure of interest rates or interest rate volatility, whether valued by mark-to-model or mark-to-market techniques.

2.6.5.2. Direct property investments, equity investments and investments in related entities should not be considered to be interest rate sensitive.

2.6.5.3. Assets sensitive to interest rate movements will include, but are not limited to, fixed-income investments, financing instruments (for example loan capital), policy loans, interest rate derivatives and any insurance assets.

2.6.5.4. Consideration should be given to the fact that callable bonds, and other types of interest rate structures, may not be called by the issuer in the event that spreads widen or interest rates increase. This may have an impact on the duration of the asset.

2.6.5.5. The discounted value of future cash flows, particularly in the valuation of technical provisions, will be sensitive to a change in the rate at which those cash flows are discounted.

Capital Requirement

2.6.5.6. The capital requirement relating to interest rate risk is determined as the result of two pre-defined scenarios:

$$Market_{interest}{}^{Up} = \Delta BOF|InterestUpShock$$
$$Market_{interest}{}^{Down} = \Delta BOF|InterestDownShock$$

Where:

1) ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.
2) $InterestUpShock$ is the instantaneous permanent revaluation of all interest rate sensitive items using altered term structures upwards.
3) $InterestDownShock$ is the instantaneous permanent revaluation of all interest rate sensitive items using altered term structures downwards.

The shocks in both cases should be applied to spot rates.

2.6.5.7. Where an insurer is exposed to interest rate movements in more than one currency, the capital requirement for interest rate risk should be calculated based on the larger of the sum over all currencies of the capital requirement for interest rate risk under the upward shock and the sum over all currencies of the capital requirement for interest rate risk under the downward shock. The sum over all currencies should be considered irrespective of an increase or decrease in basic own funds for one or another currency.

2.6.5.8. The altered term structures are derived by multiplying the current interest rate curve by $(1 + s^{up})$ and $(1 + s^{down})$, where both the upward stress, $s^{up}(t)$, and the downward stress, $s^{down}(t)$, for individual maturities t are specified as follows:

Maturity t (years)	Relative change $s^{up}(t)$	Relative change $s^{down}(t)$
1	70%	-75%
2	70%	-65%
3	64%	-56%
4	59%	-50%
5	55%	-46%
6	52%	-42%
7	49%	-39%
8	47%	-36%
9	44%	-33%
10	42%	-31%
11	39%	-30%
12	37%	-29%
13	35%	-28%
14	34%	-28%
15	33%	-27%
16	31%	-28%
17	30%	-28%
18	29%	-28%
19	27%	-29%
20	26%	-29%
90	20%	-20%

For example, the altered 10 year interest rate, $r_1(10)$, in the upward shock scenario is determined as:

$$r_1(10) = r_0(10) \cdot (1 + 0.42)$$

Where $r_0(10)$ is the 10 year interest rate based on the current term structure.

2.6.5.9. All interest rates for all maturity points should be shocked with the relevant up or down stresses. For maturities not specified above, the value of the shock shall be linearly interpolated. Note that for maturities greater than 90 years, a stress of ±20% should be maintained. For maturities shorter than one year, the relative change under the s^{up} shock is +70% and -75% under the s^{down} shock.

2.6.5.10. Irrespective of the above shock factors, the absolute increase of interest rates in the upward scenario should be at least one percentage point.

2.6.5.11. When, for a given maturity, the initial value of the interest rate is negative, the insurer should calculate the increase or decrease of the interest rate as the product between the s^{up} or s^{down} shock and the absolute value of the initial interest rate.

For example, in the case of initial negative interest rates, the altered 10 year interest rate, $r_1(10)$, in the upward shock scenario is determined as:

$$r_1(10) = r_0(10) + |r_0(10)| \cdot 0.42$$

and in the downward shock:

$$r_1(10) = r_0(10) - |r_0(10)| \cdot 0.31$$

2.6.5.12. The impact of the interest rate shocks on the value of participations in financial and credit institutions shall be considered only on the value of the participations that are not deducted from own funds. The part deducted from own funds shall be considered only to the extent that such impact increases basic own funds.

2.6.5.13. Holdings in subordinated liabilities issued by the related entity are treated as financial instruments taking account of contractual terms and applying market shocks as appropriate (i.e. the interest rate, spread, currency, concentration and other risk scenarios as appropriate).

2.6.5.14. Where there are any assets which exhibit both fixed income and equity characteristics, both of these features should be taken into account when determining which of the standard formula's risk shock scenarios should apply. The determination of which risk shock scenarios apply should have regard to the economic form of the asset. Where the asset can be considered as the composite of discrete components, it may be appropriate to apply the relevant shocks to each of these components separately. Where it is not possible to consider the asset as the composite of separate components, then the determination of which of the standard formula risk shock scenarios apply should be based on whichever of the fixed income or equity characteristics are predominant in an economic sense.

2.6.5.15. The interest rate scenarios should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.6.5.16. Additionally, the result of the scenarios should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock scenario being tested.

2.6.5.17. The capital requirement for interest rate risk is derived from the type of shock scenario that gives rise to the highest capital requirement including the loss absorbing capacity of technical provisions:

- If $nMarket_{interest}^{Up} > nMarket_{interest}^{Down}$ then
  $nMarket_{interest} = \max\left(0; nMarket_{int}^{Up}\right)$ &
  $Market_{interest} = \max\left(0; Market_{int}^{Up}\right)$
- If $nMarket_{interest}^{Up} \leq nMarket_{interest}^{Down}$ then
  $nMarket_{interest} = \max(0; nMarket_{int}^{Down})$ &
  $Market_{interest} = \max(0; Market_{int}^{Down})$

2.6.6. Equity Risk

Description

2.6.6.1. Equity risk is caused by the sensitivity of assets, liabilities and financial investments to fluctuations in the level or volatility of the market prices for equities.

2.6.6.2. Exposure to equity risk refers to all assets and liabilities whose value is sensitive to changes in equity prices.

2.6.6.3. For the calculation of the equity risk capital requirement, hedging and risk transfer mechanisms should be taken into account according to the principles of subsection 2.12 – 'Financial Risk Mitigation'.

2.6.6.4. Where insurers or reinsurers hold short positions in equity (including put options), these should only be netted off against long equity positions, for the purposes of determining the equity risk capital requirement, only if the short position meets the requirements to be considered as an acceptable risk mitigation technique for the purposes of the calculation of the SCR with the standard formula.

2.6.6.5. Any other short equity exposure should be ignored when calculating the equity stress in the equity risk scenario. The residual short equity exposure should not be considered to increase in value after application of the downward shock to equity values.

2.6.6.6. Where there are any assets which exhibit both fixed income and equity characteristics, both of these features should be taken into account when determining which of the standard formula's risk shock scenarios should apply. The determination of which risk shock scenarios apply should have regard to the economic form of the asset. Where the asset can be considered as the composite of discrete components, it may be appropriate to apply the relevant shocks to each of these components separately. Where it is not possible to consider the asset as the composite of separate components, then the determination of which of the standard formula risk shock scenarios apply should be based on whichever of the fixed income or equity characteristics are predominant in an economic sense.

Capital Requirement

2.6.6.7. For the calculation of the equity risk capital requirement, equities are split into the following two types:

1) Type 1 Equities comprise:
   - Equities listed in regulated markets in countries which are members of the EEA or the OECD;
2) Type 2 equities shall comprise of:
   - Equities listed on stock exchanges in countries that are not members of the EEA or OECD;
   - Equities that are not listed;
   - Hedge funds;

- Commodities;
- Other alternative investments;
- All remaining investments other than those already covered by the interest rate risk, property risk or the spread risk shock scenarios; this includes the assets and indirect exposures that are subjected to equity risk where a look-through approach was not possible.

Step 1

2.6.6.8. The capital requirement relating to equity risk for each type, *i*, is derived from the type of shock scenario that gives rise to the highest capital requirement including the loss absorbing capacity of technical provisions and is calculated as follows:

- If $nEq_{vol,i}^{Up} > nEq_{vol,i}^{Down}$ then

  $nMarket_{equity,i} = \max(0; nEq_{vol,i}^{Up})$ & $Market_{equity,i} = \max(0; Eq_{vol,i}^{Up})$
- If $nEq_{vol,i}^{Up} \leq nEq_{vol,i}^{Down}$ then

  $nMarket_{equity,i} = \max(0; nEq_{vol,i}^{Down})$ & $Market_{equity,i} = \max(0; Eq_{vol,i}^{Down})$

  Where:

1) $Market_{equity,i}$ is the equity risk capital requirement with respect to equity type *i*.
2) $Eq_{vol,i}^{Up} = \max(0; \Delta BOF|VolUp, EquityShock_i)$
   a) $VolUp, EquityShock_i$ is the result of two stress scenarios which have been correlated using the following matrix:

$EqVolUpCorr$	$EquityShock_i$	$VolUp$
$EquityShock_i$	1	0.75
$VolUp$	0.75	1

   b) $VolUp$ is a relative volatility stress of 50% in the upwards direction
   c) $EquityShock_i$ is an instantaneous permanent decrease in the value of all type *i* equity investments as defined in 5) below.
3) $Eq_{vol,i}^{Down} = \max(0; \Delta BOF|VolDown, EquityShock_i)$
   a) $vol\ down, EquityShock_i$ is the result of two stress scenarios which have been correlated using the following matrix:

$EqVolDownCorr$	$EquityShock_i$	$VolDown$
$EquityShock_i$	1	0
$VolDown$	0	1

   b) $VolDown$ is a relative volatility stress of 15% in the downwards direction
   c) $EquityShock_i$ is an instantaneous permanent decrease in the value of all type *i* equity investments as defined in 5) below.
4) ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.

5) $EquityShock_i$ is the instantaneous permanent decrease in the value of all type *i* equity investments (as detailed above) by a shock factor specific to equity type *i*. The base level equity shock scenarios for each equity type are specified as:

	Type 1	Type 2
$EquityShock_i$	39%	49%

2.6.6.9. If an insurer is not exposed to equity volatility risk, the calculation is simplified in the following way:

$$Market_{equity,i} = \max(0; \Delta BOF|EquityShock_i)$$

2.6.6.10. The equity shock scenario should take into account all of the insurer's individual direct and indirect exposures to equity prices. All equities and equity type exposures have to be taken into account, including private equity as well as certain types of alternative investments.

2.6.6.11. Alternative investments are treated as Type 2 equities and should cover all types of equity type risk such as hedge funds, derivatives, managed futures, investments in special purpose vehicles, etc., which cannot be allocated to spread risk or classical equity type risk, either directly or where a look-through approach was not possible.

2.6.6.12. The equity exposure of mutual funds should be allocated on a look-through basis as specified for collective investment funds in subsection 2.6.4.

2.6.6.13. The equity scenarios should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.6.6.14. Additionally, the result of the scenarios should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being tested. The resulting capital requirement is $nMarket_{equity}$.

Step 2

2.6.6.15. The equity risk capital requirement is then derived by combining the capital requirements for the individual categories using a correlation matrix as follows:

$$Market_{equity} = \sqrt{\sum_{r,c} EqCorr_{r,c} \cdot Market_{equity,r} \cdot Market_{equity,c}}$$

Where:

- $EqCorr_{r,c}$ are the entries of the correlation matrix $EqCorr$
- $Mkt_{equity,r}$, $Mkt_{equity,c}$ are the capital requirements for equity risk per type according to the rows and columns of the correlation matrix $EqCorr$

- $EqCorr$ is defined as:

$EqCorr$	Type 1	Type 2
Type 1	1	0.75
Type 2	0.75	1

2.6.7. Property Risk

Description

2.6.7.1. Property risk is caused by the sensitivity of assets, liabilities and financial investments to fluctuations in the level or volatility of the market prices of property.

2.6.7.2. The investments that should be treated as property, hence, be considered in the property scenario are:

- Land, buildings and immovable property rights;
- Property investment for the insurer's own use.

2.6.7.3. All other 'property-type' investments should be treated as equity, hence, be considered in the equity scenario instead. Examples of such investments include:

- Investments in companies engaged in real estate management, facility management or real estate administration;
- Investments in companies engaged in real estate project development or similar activities;
- Investments in companies which took out loans from institutions outside the scope of the insurance group in order to leverage their investments in properties.

2.6.7.4. A look-through approach should be adopted for any investments in collective real estate investment vehicles as with any other collect investment vehicle.

2.6.7.5. If a company serves as a holding structure for real estate assets and it is not considered a related entity, it should be subject to the look-through approach.

2.6.7.6. Collective real estate investment entities which are not considered a related entity as defined in 2.6.4.3 should be treated like other collective investment entities, with a look-through approach.

Capital Requirement

2.6.7.7. The capital requirement relating to property risk is calculated as follows:

$$Market_{property} = \max(0; \Delta BOF | PropertyShock)$$

Where:

1) ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.
2) $PropertyShock$ is the instantaneous permanent decrease in the value of all property investments (as detailed above) by 25%.

2.6.7.8. The property shock scenario should take into account all of the insurer's individual direct and indirect exposures to property prices as well as their specific investment policy including e.g. hedging arrangements, gearing etc.

2.6.7.9. The property scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.6.7.10. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being tested. The resulting capital requirement is $nMarket_{property}$.

2.6.8. Currency Risk

Description

2.6.8.1. Currency risk is caused by the sensitivity of assets, liabilities and financial investments to fluctuations in the level or volatility of currency exchange rates.

2.6.8.2. Insurers may be exposed to currency risk arising from various sources, including their investment portfolios, as well as assets, liabilities and investments in related entities. The design of the currency risk shock scenario is intended to take into account currency risk for an insurer arising from all possible sources.

2.6.8.3. The *local currency* is the currency in which the insurer prepares its financial statements. All other currencies are referred to as *foreign currencies*. A foreign currency is *relevant* for the scenario calculations if the amount of basic own funds depends on the exchange rate between the foreign currency and the local currency.

2.6.8.4. Note that for each relevant foreign currency, the currency position should include any investment in foreign instruments where the currency risk is not hedged. This is because the shocks for interest rate, equity, spread and property risks have not been designed to incorporate currency risk.

2.6.8.5. Investments in Type 1 and Type 2 equities which are listed in stock exchanges operating with different currencies should be assumed to be sensitive to the currency of their main listing. Type 2 equities which are non-listed shall be assumed to be sensitive to the currency of the country in which the issuer has its main operations. Immovable property should be assumed to be sensitive to the currency of the country in which it is located.

Capital Requirement

2.6.8.6. The capital requirement relating to currency risk for each currency group C (defined in 2.6.8.11) is calculated as the higher result of two pre-defined scenarios:

$$Market_{fx,C}{}^{Up} = \max(0; \Delta BOF|FXUpwardShock)$$
$$Market_{fx,C}{}^{Down} = \max(0; \Delta BOF|FXDownwardShock)$$

Where:

1) ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.
2) $FXUpwardShock$ is the instantaneous permanent increase in the value of the currencies in currency group C, against the local currency by 25%.
3) $FXDownwardShock$ is the instantaneous permanent decrease in the value of the currencies in the currency group C, against the local currency by 25%.

2.6.8.7. All of the participant's individual currency positions and its investment policy (e.g. hedging arrangements, gearing etc.) should be taken into account in the currency shock scenarios.

2.6.8.8. The currency shock scenarios should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.6.8.9. Additionally, the result of the scenarios should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being tested. The resulting capital requirements are ${nMarket_{fx,C}}^{Up}$ and ${nMarket_{fx,C}}^{Down}$.

2.6.8.10. For each currency group C, the capital requirement should be derived from the type of shock scenario that gives rise to the highest capital requirement including the loss absorbing capacity of technical provisions and is calculated as follows:

- If $nMarket_{fx,C}^{Up} > nMarket_{fx,C}^{Down}$ then

  $nMarket_{fx,C} = \max\left(0; nMarket_{fx,C}^{Up}\right)$ &

  $$Market_{fx,C} = \max\left(0; Market_{fx,C}^{Up}\right)$$

- If $nMarket_{fx,C}^{Up} \leq nMarket_{fx,C}^{Down}$ then

  $nMarket_{fx,C} = \max\left(0; nMarket_{fx,C}^{Down}\right)$ &

  $$Market_{fx,C} = \max\left(0; Market_{fx,C}^{Down}\right)$$

2.6.8.11. The total currency risk capital requirement, $Market_{fx}$, is then derived by combining the capital requirements, $Market_{fx,C}$, for each currency exposure using a correlation matrix as follows:

$$Market_{fx} = \sqrt{\sum_{r,c} CurrencyCorr_{r,c} \cdot Market_{fx,r} \cdot Market_{fx,c}}$$

Where:

- $CurrencyCorr_{r,c}$ are the entries of the correlation matrix $CurrencyCorr$.
- $Market_{fx,r}$, $Market_{fx,c}$ are the capital requirements resulting from the shock scenarios defined in 2.6.8.6 per currency according to the rows and columns of the correlation matrix $CurrencyCorr$.

- $CurrencyCorr$ is defined as:

$CurrencyCorr$	1	2	3	4	5	6	7	8	9	10
CurrGroup 1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CurrGroup 2	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CurrGroup 3	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CurrGroup 4	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5
CurrGroup 5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5
CurrGroup 6	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5
CurrGroup 7	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5
CurrGroup 8	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5
CurrGroup 9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5
CurrGroup 10	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1

Where the currency groups have been determined so as to reflect a strong historical positive correlation of the currencies within a group as follows:

1) *CurrGroup1* consists of currencies within the European Union and the European Free Trade Area (other than the pound sterling) including:
   - Euro (EUR)
   - Swiss Franc (CHF)
   - Swedish Krona (SEK)
   - Norwegian Krone (NOK)
   - Danish Krone (DKK)
   - Polish Zloty (PLN)
   - Czech Koruna (CZK)
   - Hungarian Forint (HUF)
   - Bulgarian Lev (BGN)
   - Croatian Kuna (HRK)
   - Romanian Leu (RON)
2) *CurrGroup2* consists of:
   - US Dollar (USD)
   - Chinese Yuan Renminbi (CNY)
   - Hong Kong Dollar (HKD)
   - Taiwan Dollar (TWD)
   - Saudi Riyal (SAR)
   - Any other currencies officially pegged to the US Dollar

3) *CurrGroup3* consists of:
   - Singapore Dollar (SGD)
   - Indian Rupee (INR)
   - Malaysian Ringgit (MYR)
   - Thai Baht (THB)
4) *CurrGroup4* consists of:
   - Australian Dollar (AUD)
   - New Zealand Dollar (NZD)
   - South African Rand (ZAR)
5) *CurrGroup5* consists of:
   - Canadian Dollar (CAD)
   - Brazilian Real (BRL)
   - Mexican Peso (MXN)
   - Chilean Peso (CLP)
   - Colombian Peso (COP)
6) *CurrGroup6* consists of:
   - Japanese Yen (JPY)
7) *CurrGroup7* consists of:
   - Russian Ruble (RUB)
8) *CurrGroup8* consists of:
   - Turkish Lira (TRY)
9) *CurrGroup9* consists of:
   - South Korean Won (KRW)
10) *CurrGroup10* consists of:
   - Icelandic Krona (ISK)

2.6.8.12. Where insurers have a material exposure to a single currency group, C, and the following conditions apply:

1) The present value of future charges are more than 50% in currency group C;
2) The present value of future charges exceeds the present value of future expenses; and
3) The present value of future charges would continue to exceed the present value of future expenses after the more adverse of $FXUpwardShock$ and $FXDownwardShock$ is applied to currency group C against the reporting currency.

they may treat currency group C as the local currency for this shock scenario.

Therefore, the process above should still be followed, with the difference being that the reporting currency shall replace the currency group that is now classified as the local currency.

For example, if the insurer has a material exposure to US Dollars, and the above conditions apply, US Dollars would be treated as the local currency in the currency shock scenario. Therefore, all other currencies within group 2 would be unaffected under this shock scenario. Instead, the impacts of a permanent increase and decrease of 25% in the value of GBP against USD should be calculated and input into the *CurrGroup2* section of the QIS4 template.

2.6.8.13. Where insurers have material exposures to one or more currencies other than those specified in the ten currency groups above they should discuss this with the FSA and agree which currency group the currency should be modelled in (which may be a further group).

2.6.8.14. Where reinsurers transfer underwriting risk using reinsurance contracts or special purpose vehicles that result in material basis risk from a currency mismatch between underwriting risk and the risk-mitigation technique, insurers or reinsurers may take into account the risk-mitigation technique in the calculation of the SCR, provided that the risk-mitigation technique meets the requirements set out in section 2.12 – 'Financial Risk Mitigation, and the calculation is carried out in accordance with the following:

1) The currency basis risk stemming from the risk-mitigation technique shall be taken into account in the relevant underwriting risk scenario of the standard formula, at the most granular level, by adding the capital requirement calculated in accordance with the relevant scenario, 25% of the difference between the following:
   a) The hypothetical capital requirement for the relevant underwriting risk scenario that would result from a simultaneous occurrence of the stress defined in 2.6.8.6;
   b) The capital requirement for the relevant underwriting risk scenario.
2) Where the risk-mitigation technique covers more than one risk scenario, the calculation determined in 1) above shall be carried out for each of these scenarios. The capital requirement resulting from these calculations shall not exceed 25% of the capacity of the non-proportional reinsurance contract or special purpose vehicle.

Simplification

2.6.8.15. The approach to calculating the capital requirement set out in 2.6.8.6 to 2.6.8.14 above has been adapted by us from the approach used in Solvency II, to reflect the specific situation of Isle of Man life insurers in that they are typically exposed to a wider range of currencies than domestic European insurers. We believe that the Solvency II approach, which assumes all currencies simultaneously move in an adverse direction to the reporting currency, is likely to be materially more onerous than a 1 in 200 year stress as it takes no account of diversification of exposure.

2.6.8.16. However, to simplify the calculation, insurers may opt to calculate the capital requirement for currency risk using the Solvency II approach, as set out below.

2.6.8.17. For each currency, the capital requirement, $Market_{fx,C}$, under Solvency II is derived from the type of shock scenario that gives rise to the highest capital requirement including the loss absorbing capacity of technical provisions, where ${Market_{fx,C}}^{Up}$ and ${Market_{fx,C}}^{Down}$ are as defined in 2.6.8.6 and ${nMarket_{fx,C}}^{Up}$ and ${nMarket_{fx,C}}^{Down}$ are as defined in 2.6.8.9 i.e.:

- If $nMarket_{fx,C}^{Up} > nMarket_{fx,C}^{Down}$ then

  $nMarket_{fx,C} = \max(0; nMarket_{fx,C}^{Up})$ &

  $$Market_{fx,C} = \max(0; Market_{fx,C}^{Up})$$

- If $nMarket_{fx,C}^{Up} \leq nMarket_{fx,C}^{Down}$ then

  $nMarket_{fx,C} = \max(0; nMarket_{fx,C}^{Down})$ &

  $$Market_{fx,C} = \max(0; Market_{fx,C}^{Down})$$

The total capital requirements, $nMarket_{fx}$ and $Market_{fx}$ are then calculated as the sum over all currencies of $nMarket_{fx,C}$ and $Market_{fx,C}$ respectively.

2.6.9. Spread Risk

Description

2.6.9.1. Spread risk results from the sensitivity of the value of assets, liabilities and financial instruments to changes in the level or in the volatility of credit spreads over the risk-free interest rate term structure.

2.6.9.2. The spread risk module applies in particular to the following classes of bonds:

1) Corporate bonds;
2) Subordinated debt investments, depending on the contractual terms;
3) Investment instruments with equity and bond features;
4) Covered bonds;
5) Loans other than retail loans secured by a residential mortgage;
6) Securitisation positions;
7) Credit derivatives other than for hedging purposes.

2.6.9.3. Consideration should be given to the fact that callable bonds and other types of interest rate structures may not be called by the issuer in the event that spreads widen or interest rates increase. This may have an impact on the duration of the asset.

2.6.9.4. A repo-seller, having agreed to repurchase collateral at a future date, should take account of any risk associated with the collateral even though he is not presently holding it.

2.6.9.5. A repo-lender should take account of any concentration, interest, spread or counterparty risk associated with the items exchanged for the collateral, taking into account the credit risk of the repo-seller.

2.6.9.6. Holdings in subordinated liabilities issued by related entities are treated as financial instruments taking account of contractual terms and applying market stresses as appropriate (i.e. the interest rate, spread, currency, concentration and other shock scenarios as appropriate).

2.6.9.7. Where there are any assets which exhibit both fixed income and equity characteristics, both of these features should be taken into account when determining which standard formula shock scenarios should apply.

The determination of which standard formula shock scenarios apply should have regard to the economic form of the asset. Where the asset can be considered as the composite of discrete components, it may be appropriate to apply the relevant stresses to each of these components separately. Where it is not possible to consider the asset as the composite of separate components then the determination of which of the standard formula shock scenarios apply should be based on which of the fixed income or equity characteristics is predominant in an economic sense.

2.6.9.8. Furthermore, the spread risk shock scenario is applicable to all types of asset-backed securities as well as to all the tranches of structured credit products such as collateralised debt obligations. This class of securities includes transactions of schemes whereby the credit risk associated with an exposure or pool of exposures is tranched, having the following characteristics:

1) Payments in the transaction or scheme are dependent upon the performance of the exposure or pool of exposures; and
2) The subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme.

2.6.9.9. The spread risk shock scenario further covers in particular credit derivatives, for example (but not limited to) credit default swaps, total return swaps and credit linked notes that are not held as part of a recognised risk mitigation policy.

A protection buyer in a total return swap arrangement should consider the arrangement to be a risk mitigation technique in accordance with 2.12 and 2.14. Any fixed leg of the contract should be subject to spread and interest rate risk.

A protection seller in a total return swap arrangement should take into account any market and counterparty risk associated with the items underlying the swap.

2.6.9.10. In relation to credit derivatives, only the credit risk which is transferred by the derivative is covered in the spread risk shock scenario.

2.6.9.11. Instruments sensitive to changes in credit spreads may also give rise to other risks, which should be treated accordingly in the appropriate shock scenarios. For example, the counterparty default risk associated with the counterparty of a risk-mitigating transaction should be addressed in the counterparty default risk module, rather than in the spread risk shock scenario.

2.6.9.12. The spread risk shock scenario also covers the credit risk of other credit risky investments including in particular:

1) Participating interests;

2) Debt securities issued by, and loans to, affiliated entities and entities with which an insurer is linked by virtue of a participating interest;
3) Debt securities and other fixed-income securities;
4) Participation in investment pools;
5) Deposits with credit institutions, other than cash at bank. Cash at bank is treated in the counterparty default risk scenario.

2.6.9.13. The design for the spread risk shock scenario implies that credit spread risk hedging programmes can still be taken into account when calculating the capital requirement for this risk type. This enables insurers to gain appropriate recognition of, and allowance for, their hedging instruments – subject to proper treatment of the risks inherent in the hedging programmes.

Calculation

2.6.9.14. The capital requirement for spread risk is calculated as follows:

$$Market_{sp} = Market_{sp}^{bonds} + Market_{sp}^{securitisation} + Market_{sp}^{cd}$$

Where:

- $Market_{sp}^{bonds}$ is the capital requirement for spread risk of bonds and loans other than residential mortgage loans fulfilling the criteria set out in 2.7.4.10.
- $Market_{sp}^{securitisation}$ is the capital requirement for spread risk of tradable securities or other financial instruments based on repackaged loans which are offered by way of securitisation as defined in 2.6.9.31.
- $Market_{sp}^{cd}$ is the capital requirement for spread risk on credit derivatives.

2.6.9.15. The spread risk shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.6.9.16. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being tested. The resulting capital requirement is $nMarket_{sp}$.

Spread risk on bonds and loans other than residential mortgage loans that meet the requirements set out in 2.7.6.2

2.6.9.17. The capital requirement for spread risk of bonds and loans other than residential mortgage loans that meet the requirements set out in 2.7.6.2 is determined as the result of a pre-defined scenario:

$$Market_{sp}^{bonds} = \max(0; \Delta BOF|spread\ shock\ on\ bonds)$$

2.6.9.18. The change in basic own funds as a result of the spread risk shock on bonds and loans other than residential mortgage loans that meet the requirements in 2.7.6.2 is the immediate effect on the net value of assets and liabilities expected in the event of an instantaneous decrease of values in bonds and loans other than non-residential mortgage loans due to the widening of their credit spreads. The change in basic own funds is given below:

$$\sum_i MV_i \cdot F^{up}(rating_i; duration_i)$$

Where:

- $F^{up}(rating_i; duration_i)$ is a function of the credit quality step of the credit risk exposure and duration which is calibrated to deliver a shock consistent with VaR 99.5% following a widening of credit spreads. The spread risk factor $F^{up}(rating_i; duration_i)$ is capped at a level of 100%;
- MV_i is the value of the credit risk exposure in accordance to subsection 1.1.

2.6.9.19. To determine the spread risk capital requirement for bonds and loans other than residential mortgage loans that meet the requirements set out in 2.7.6.2, the following factors F^{up} should be used:

Spread risk factors for bonds

Duration (years)	Credit quality step (see Appendix B)					
	0	1	2	3	4	5, 6
≤ 5	$0.9\% \cdot duration_i$	$1.1\% \cdot duration_i$	$1.4\% \cdot duration_i$	$2.5\% \cdot duration_i$	$4.5\% \cdot duration_i$	$7.5\% \cdot duration_i$
5<dur≤ 10	$4.5\% + 0.5\% \cdot (duration_i - 5)$	$5.5\% + 0.6\% \cdot (duration_i - 5)$	$7.0\% + 0.7\% \cdot (duration_i - 5)$	$12.5\% + 1.5\% \cdot (duration_i - 5)$	$22.5\% + 2.5\% \cdot (duration_i - 5)$	$37.5\% + 4.2\% \cdot (duration_i - 5)$
10 <dur≤ 15	$7.2\% + 0.5\% \cdot (duration_i - 10)$	$8.4\% + 0.5\% \cdot (duration_i - 10)$	$10.5\% + 0.5\% \cdot (duration_i - 10)$	$20.0\% + 1.0\% \cdot (duration_i - 10)$	$35.0\% + 1.8\% \cdot (duration_i - 10)$	$58.5\% + 0.5\% \cdot (duration_i - 10)$
15 < dur≤ 20	$9.7\% + 0.5\% \cdot (duration_i - 15)$	$10.9\% + 0.5\% \cdot (duration_i - 15)$	$13.0\% + 0.5\% \cdot (duration_i - 15)$	$25.0\% + 1.0\% \cdot (duration_i - 15)$	$44.0\% + 0.5\% \cdot (duration_i - 15)$	$61.0\% + 0.5\% \cdot (duration_i - 15)$
> 20	$12.2\% + 0.5\% \cdot (duration_i - 20)$	$13.4\% + 0.5\% \cdot (duration_i - 20)$	$15.5\% + 0.5\% \cdot (duration_i - 20)$	$30.0\% + 0.5\% \cdot (duration_i - 20)$	$46.6\% + 0.5\% \cdot (duration_i - 20)$	$63.5\% + 0.5\% \cdot (duration_i - 20)$

For unrated exposures, the following spread risk factors, F^{up}, for bonds and loans other than residential mortgage loans should be used:

Duration (years)	F_i^{Up}
Up to 5	3.0% · $duration_i$
More than 5 and up to 10	15.0% + 1.7% · ($duration_i$ - 5)
More than 10 and up to 20	23.5% + 1.2% · ($duration_i$ - 10)
More than 20	Min[35.5% + 0.5% · ($duration_i$ - 20);1]

2.6.9.20. Collateralised bonds and loans for which a credit assessment by a nominated External Credit Assessment Institution (ECAI) is not available and where the collaterals of those bonds and loans meet the criteria set out in section 2.12 on risk mitigation techniques, shall be assigned a risk factor F^{up} according to the following:

1) Where the risk-adjusted value of collateral is higher than or equal to the value of the bond or loan i, F^{up} shall be equal to half of the risk factor that would be determined in accordance with 2.6.9.19;
2) Where the risk-adjusted value of collateral is lower than the value of the bond or loan i, and where the risk factor determined in accordance with 2.6.9.19 would result in a value of the bond or loan i that is lower than the risk-adjusted value of the collateral, F^{up} shall be equal to the average of:
   a) The risk factor determined in accordance with 2.6.9.19; and
   b) The difference between the value of the bond or loan, i, and the risk-adjusted value of the collateral, divided by the value of the bond or loan i;
3) Where the risk-adjusted value of collateral is lower than the value of the bond or loan, i, and where the risk factor determined in accordance with 2.6.9.19 would result in a value of the bond or loan i that is higher than or equal to the risk-adjusted value of the collateral, F^{up} shall be determined in accordance with 2.6.9.19.

The risk-adjusted value of the collaterals shall be calculated in accordance with section 2.7.7.1 - 2.7.7.10.

2.6.9.21. The factors F^{up} are applied to assess the impact of a widening of spreads on the value of bonds. For example, for a bond with a credit quality step 0 and a duration of 5 years, a loss in value of 4.5% would be assumed under the widening of spreads scenario.

2.6.9.22. For variable interest rate bonds, the modified duration used in the calculation should be equivalent to a fixed income bond with coupon payments equal to the forward interest rate. If the modified duration is less than 1 year, it should be treated as 1 year.

2.6.9.23. For exposures to bonds issued by insurers or reinsurers that do not meet their MCR, the following shock factors shall apply:

Duration (years)	F_i^{Up}
Up to 5	$7.5\% \cdot duration_i$
More than 5 and up to 10	$37.5\% + 4.2\% \cdot (duration_i - 5)$
More than 10 and up to 15	$58.5\% + 0.5\% \cdot (duration_i - 10)$
More than 15 and up to 20	$61.0\% + 0.5\% \cdot (duration_i - 15)$
More than 20	$\text{Min}[63.5\% + 0.5\% \cdot (\text{duration}_\text{i} - 20); 1]$

2.6.9.24. For exposures to bonds issued by insurers or reinsurers for which a credit assessment by a nominated ECAI is not available and that the insurers or reinsurers meet the following requirements:

1) Meet their MCR;
2) The Solvency ratios are determined according to the requirements set out in these specifications;
3) The Solvency ratios are determined consistently to the scenario under consideration.

The following mapping between solvency ratios and credit quality steps should be applied to determine the risk factors listed in 2.6.9.19,

Solvency ratio	196%	175%	122%	95%	75%	75%
Credit quality step	1	2	3	4	5	6

Where the solvency ratio falls in between the solvency ratios set out in the table above, the value of F^{up} shall be linearly interpolated from the closest values of F^{up} corresponding to the closest solvency ratios set out in the table above. Where the solvency ratio is lower than 75%, F^{up} shall be equal to the factor corresponding to the credit quality steps 5 and 6. Where the solvency ratio is higher than 196%, F^{up} shall be the same as the factor corresponding to the credit quality step 1.

Special reference to covered bonds

2.6.9.25. In order to provide covered bonds with a treatment in the spread risk shock scenario according to their specific features, the risk factor F^{up} should be applied according to the table below, subject to the following requirements being met:

1) The asset has a credit quality step of 0 or 1;

2) The covered bond must be issued by a credit institution which has its registered office in the Isle of Man or a Member State of the European Union and is subject by law to special public supervision designed to protect bond-holders. In particular, sums deriving from the issue of these bonds must be invested in conformity with the law in assets which, during the whole period of validity of the bonds, are capable of covering claims attaching to the bonds and which, in the event of failure of the issuer, would be used on a priority basis for the reimbursement of the principal and payment of the accrued interest.

	Commercial insurer	
Duration (years)	**0**	**1**
Up to 5	$0.7\% \cdot duration_i$	$0.9\% \cdot duration_i$
More than 5	$\text{Min}(1; 3.5\% + 0.5\% \cdot (duration_i - 5))$	$\text{Min}(1; 4.5\% + 0.5\% \cdot (duration_i - 5))$

Special reference to exposures to central governments, central banks, multilateral development banks and international organisations

2.6.9.26. A risk factor of 0% should apply for the purposes of this risk shock scenario to:

- Exposures to the Isle of Man Government;
- Exposures to EU Member States' central government;
- Central banks denominated and funded in any domestic currency of an EU Member State;
- Instruments issued by a multilateral development bank such as:
  - The International Bank for Reconstruction and Development;
  - The International Finance Corporation;
  - The Inter-American Development Bank;
  - The Asian Development Bank;
  - The African Development Bank;
  - The Council of Europe Development Bank;
  - The Nordic Investment Bank;
  - The Caribbean Development Bank;
  - The European Bank for Reconstruction and Development;
  - The European Investment Bank;
  - The European Investment Fund;
  - The Multilateral Investment Guarantee Agency;
  - The International Finance Facility for Immunisation;
  - The Islamic Development Bank.
- Exposures to international organisations such as:
  - The European Community;
  - The International Monetary Fund;
  - The Bank for International Settlements.

- Exposures to the European Central Bank;
- Exposures that are fully, unconditionally and irrevocably guaranteed by the European Investment Bank or the European Investment Fund.

2.6.9.27. The zero risk charge referred to in 2.6.9.26 only applies to debt exposures to the named organisations. It does not extend to investments in entities which are owned by one of the named organisations.

2.6.9.28. For the purpose of the spread risk shock scenarios, exposures to regional governments and local authorities established in the jurisdiction of a Member State shall be treated as exposures to the central government for which a zero capital requirement for spread risk applies, provided there is no difference in risk between such exposures because of the specific revenue-raising powers of the former, and specific institutional arrangements exist, the effect of which is to reduce the risk of default. Insurers and reinsurers should assess to what extent a regional government or a local authority fulfils these criteria.

2.6.9.29. To determine the spread risk capital requirement for exposures to central governments and central banks denominated and funded in the domestic currency, the following factors, F^{up}, should be used:

Duration (years)	Credit quality step					
	0	1	2	3	4	5,6
≤ 5	0%	0%	$1.1\% \cdot duration_i$	$1.4\% \cdot duration_i$	$2.5\% \cdot duration_i$	$4.5\% \cdot duration_i$
5 <dur≤ 10	0%	0%	$5.5\% + 0.6\% \cdot (duration_i - 5)$	$7.0\% + 0.7\% \cdot (duration_i - 5)$	$12.5\% + 1.5\% \cdot (duration_i - 5)$	$22.5\% + 2.5\% \cdot (duration_i - 5)$
10 <dur≤ 15	0%	0%	$8.4\% + 0.5\% \cdot (duration_i - 10)$	$10.5\% + 0.5\% \cdot (duration_i - 10)$	$20.0\% + 1.0\% \cdot (duration_i - 10)$	$35.0\% + 1.8\% \cdot (duration_i - 10)$
15<dur≤ 20	0%	0%	$10.9\% + 0.5\% \cdot (duration_i - 15)$	$13.0\% + 0.5\% \cdot (duration_i - 15)$	$25.0\% + 1.0\% \cdot (duration_i - 15)$	$44.0\% + 0.5\% \cdot (duration_i - 15)$
> 20	0%	0%	$13.4\% + 0.5\% \cdot (duration_i - 20)$	$15.5\% + 0.5\% \cdot (duration_i - 20)$	$30.0\% + 0.5\% \cdot (duration_i - 20)$	$46.5\% + 0.5\% \cdot (duration_i - 20)$

2.6.9.30. In order to allow an analysis of the impact of these provisions, insurers and reinsurers should disclose their exposures to governments and central banks.

Spread risk on securitisation positions

2.6.9.31. A securitisation is defined as a transaction or scheme, whereby the credit risk associated with an exposure or pool of exposures is tranched, having both of the following characteristics:

1) Payments in the transaction or scheme are dependent upon the performance of the exposure or pool of exposures;

2) The subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme.

2.6.9.32. The capital requirement for spread risk of securitisation positions is determined as the result of the pre-defined scenario:

$$Market_{sp}^{securitisation} = \max(0; \Delta BOF | direct\ spread\ shock\ on\ securitisation\ positions)$$

2.6.9.33. The direct spread risk shock on securitisation positions is the immediate effect on the net asset value expected in the event of the following instantaneous decrease of values in securitisation positions due to the widening of their credit spread:

$$\sum_i MV_i \cdot F^{up}(rating_i; duration_i)$$

Where:

- MV_i is the value of the credit risk exposure in accordance to subsection 1.1;
- $F^{up}(rating_i; duration_i)$ is a function of the credit quality step of the credit risk exposure and duration which is calibrated to deliver a shock consistent with VaR 99.5% following a widening of credit spreads, where the $F^{up}(rating_i; duration_i)$ rating factor is capped at 100%.

2.6.9.34. To determine the aggregate spread risk capital requirement for securitisation positions, the following split into Type 1 and Type 2 securitisation positions and re-securitisation positions should be made.

2.6.9.35. **Type 1 Securitisations** shall include exposures to securitisations that meet the following criteria:

1) The exposure has been assigned to credit quality step 3 or better;
2) The securitisation is listed in a regulated market of the Isle of Man or a country which is a member of the EEA or the OECD;
3) After the delivery of an enforcement notice and where applicable an acceleration notice, the tranche is not subordinated to other tranches of the same securitisation transaction or scheme in respect of receiving principal and interest payments;
4) The underlying assets have been acquired by the Securitisation Special Purpose Entity (SSPE) in a manner that is enforceable against any third party and are beyond reach of the seller (originator or sponsor) and its creditors including the event of the seller's insolvency;
5) There are no severe claw back provisions in the jurisdiction of the seller (originator or sponsor), this includes but is not limited to provisions under which the sale of the underlying assets can be invalidated by the liquidator of the seller (originator or sponsor) solely on the basis that it was concluded within a certain period before the declaration of the seller's insolvency or provisions where the SSPE can prevent such invalidation only if it can prove that it was not aware of the insolvency of the seller at the time of sale;

6) The securitisation includes provisions to ensure that a default of the servicer does not result in a termination of servicing and provisions to ensure the replacement of derivative counterparties and liquidity providers if applicable;
7) All the assets underlying the securitisation belong to only one of the following categories:
   a) Residential mortgages or fully guaranteed residential loans fully guaranteed by an eligible protection provider, qualifying for the credit quality step 2 or above;
   b) Loans to small and medium-sized enterprises;
   c) Auto loans and leases for the financing of:
      i. Motor vehicles – any power driven vehicles which are moved by their own means, having at least four wheels, being complete, completed or incomplete, with a maximum design speed exceeding 25km/h;
      ii. Trailers – any non-self-propelled vehicles on wheels which are designed and constructed to be towed by a motor vehicle;
      iii. Agricultural or forestry tractors – any tractor, trailer or interchangeable towed machinery, whether being complete, completed or incomplete, which is intended to be used in agriculture or forestry;
      iv. Motorcycles or motor tricycles – two-wheeled vehicles without a sidecar or with a sidecar or vehicles with three symmetrically arranged wheels respectively, fitted with an engine having a cylinder capacity of more than 50 cm^3 if of the interval combustion type and/or having a maximum design speed of more than 45 km/h; or
      v. Tracked vehicles.

      Such loans or leases may include ancillary insurance and service products or additional vehicle parts, and in the case of leases, the residual value of leased vehicles;
   d) Leased property;
   e) Consumer loans;
   f) Credit card receivables.

   The pool of underlying assets may only include derivatives if these are used strictly for hedging currency and interest rate risk.
8) The pool of underlying assets do not include loans that were granted to credit-impaired obligors, where a credit impaired obligor is a borrower (or where applicable, a guarantor) which:
   a) Has declared bankruptcy, agreed with their creditors to a debt dismissal or reschedule or had a court grant their creditors a right of enforcement or material damages as a result of a missed payment within three years prior to the date of origination; or
   b) Is on official registry of persons with adverse credit history; or
   c) Has a credit assessment by an ECAI or has a credit score indicating a significant risk that contractually agreed payments will not be made compared to the average obligor for this type of loan in the relevant jurisdiction;

9) The pool of underlying assets do not include loans in default at the time of issuance of the securitisation or when incorporated in the pool of the underlying assets at any time after issuance. Where a default shall be considered to have occurred with regard to a particular obligor when either or both of the following have taken place:
   a) The institution considers that the obligor is unlikely to pay its credit obligations to the institution, the parent entity or any of its subsidiaries in full, without recourse by the institution to actions such as realising security;
   b) The obligor is past due more than 90 days on any material credit obligation to the institution, the parent entity or any of its subsidiaries. Competent authorities may replace the 90 days with 180 days for exposures secured by residential or SME commercial real estate in the retail exposure class, as well as exposures to public sector entities).
10) Except for securitisations where the underlying assets are credit card receivables, at least one payment has been made by obligors on the loans or lease;
11) In the case of securitisations where the underlying assets are residential mortgages, the pool of underlying residential mortgage loans do not include any loan that was marketed and underwritten on the premise that the loan applicant or, where applicable intermediaries, were made aware that the information provided might not be verified by the lender;
12) In the case of securitisations backed by residential mortgages, the assessment of the borrower's creditworthiness meet the requirements set out below:
   a) Before concluding a credit agreement, the creditor makes a thorough assessment of the consumer's creditworthiness. That assessment shall take appropriate account of factors relevant to verifying the prospect of the consumer to meet their obligations under the credit agreement;
   b) The procedures and information on which the assessment is based are established, documented and maintained;
   c) The assessment of creditworthiness shall not rely predominantly on the value of the residential immovable property exceeding the amount of the credit or the assumption that the residential immovable property will increase in value unless the purposed of the credit agreement is to construct or renovate the residential immovable property;
   d) Where a creditor concludes a credit agreement with a consumer the creditor shall not subsequently cancel or alter the credit agreement to the detriment of the consumer on the grounds that the assessment of creditworthiness was incorrectly conducted. This shall not apply where it is demonstrated that the consumer knowingly withheld or falsified the information;
   e) Creditor only makes the credit available to the consumer where the result of the creditworthiness assessment indicated that the obligations resulting from the credit agreement are likely to be met in the manner required under that agreement;

f) The creditor informs the consumer in advance that a database is to be consulted;

g) Where the credit application is rejected the creditor informs the consumer without delay of the rejection and, where applicable, that the decision is based on automated processing of data. Where the rejection is based on the result of the database consultation, the creditor shall inform the consumer of the result of such consultation and of the particulars of the database consulted;

h) Consumer's creditworthiness is re-assessed on the basis of updated information before any significant increase in the total amount of credit is granted after the conclusion of the credit agreement unless such additional credit was envisaged and included in the original creditworthiness assessment.

13) Where the issuer, originator or sponsor of the securitisation is established in the EU, it discloses information on the credit quality and performance of the underlying assets, the structure of the transaction, the cash flows and any collateral supporting the exposures as well as any information that is necessary for investors to conduct comprehensive and well-informed stress tests, where the issuer, originator and sponsors are established outside the EU, comprehensive loan-level data in compliance with standards generally accepted market participants is made available to existing and potential investors and regulators at issuance and on a regular basis.

2.6.9.36. **Type 2 securitisations** shall include all securitisations that do not qualify as Type 1 securitisations and are not re-securitisation positions.

2.6.9.37. Insurers may use a transitional method for securitisations issued before the entry into force of the new regulatory regime, whereby it is assumed that securitisation positions that meet the criteria under 1), 3), 4) and 7) can be considered as Type 1 securitisations.

2.6.9.38. For Type 1 securitisations the following factors F^{up} should be used:

Credit Quality Step	Commercial insurer F_i^{Up}	Captive insurer F_i^{Up}
0	$2.1\% \cdot duration_i$	$1.0\% \cdot duration_i$
1	$4.2\% \cdot duration_i$	$2.1\% \cdot duration_i$
2	$7.4\% \cdot duration_i$	$3.7\% \cdot duration_i$
3	$8.5\% \cdot duration_i$	$4.2\% \cdot duration_i$

2.6.9.39. For Type 2 securitisations the following factors F^{up} should be used, where the modified duration should not be lower than 1 year:

Credit Quality Step	Commercial insurer F_i^{Up}	Captive insurer F_i^{Up}
0	$12.5\% \cdot duration_i$	$6.2\% \cdot duration_i$
1	$13.4\% \cdot duration_i$	$6.7\% \cdot duration_i$
2	$16.6\% \cdot duration_i$	$8.3\% \cdot duration_i$
3	$19.7\% \cdot duration_i$	$9.8\% \cdot duration_i$
4	$82.0\% \cdot duration_i$	$40.8\% \cdot duration_i$
5,6	$100.0\% \cdot duration_i$	$49.8\% \cdot duration_i$

2.6.9.40. For re-securitisations the following factors F^{up} should be used:

Credit Quality Step	Commercial insurer F_i^{Up}	Captive insurer F_i^{Up}
0	$33.0\% \cdot duration_i$	$16.4\% \cdot duration_i$
1	$40.0\% \cdot duration_i$	$19.9\% \cdot duration_i$
2	$51.0\% \cdot duration_i$	$25.4\% \cdot duration_i$
3	$91.0\% \cdot duration_i$	$45.3\% \cdot duration_i$
4	$100.0\% \cdot duration_i$	$49.8\% \cdot duration_i$
5,6	$100.0\% \cdot duration_i$	$49.8\% \cdot duration_i$

2.6.9.41. For securitisation positions of Type 2 and re-securitisation positions for which a credit quality step is not available shall be assigned a risk factor F^{up} of 100%.

Spread risk on credit derivatives

2.6.9.42. For credit derivatives a scenario-based approach is used. Credit derivatives encompass credit default swaps (CDS), total return swaps (TRS), and credit linked notes (CLN), where:

1) The insurer or reinsurer does not hold the underlying instrument or another exposure where the basis risk between that exposure and the underlying instrument is immaterial in all possible scenarios; or
2) The credit derivative is not part of the insurer's or reinsurer's risk mitigation policy.

Credit derivatives which are part of the insurer's or reinsurer's risk mitigation policy shall not be subject to a capital requirement for spread risk, as long as the insurer or reinsurer holds either the instruments underlying the credit derivative or another exposure with respect to which the basis risk between that exposure and the instruments underlying the credit derivative is not material in any circumstances.

2.6.9.43. The capital requirement for spread risk of credit derivatives is determined as the result of two pre-defined scenarios:

$$Mkt_{sp,upward}^{cd} = \max(0; \Delta BOF|\ upward\ spread\ shock\ on\ credit\ derivatives)$$

$$Mkt_{sp,downward}^{cd} = \max(0; \Delta BOF|\ downward\ spread\ shock\ on\ credit\ derivatives)$$

2.6.9.44. The capital requirement for spread risk on credit derivatives is equal to the loss in basic own funds that would result from an instantaneous absolute increase in credit spreads of the instruments underlying the credit derivative or from an instantaneous relative decrease in spreads of the instruments underlying the credit derivatives according to the following magnitude:

Spread risk factors for credit derivatives

Credit quality step	Widening of spreads (in absolute terms)	Decrease of spreads (in relative terms)
0	+130bp	-75%
1	+150bp	-75%
2	+260bp	-75%
3	+450bp	-75%
4	+840bp	-75%
5	+1620bp	-75%
6	+1620bp	-75%

2.6.9.45. The capital requirement for spread risk on credit derivatives is derived from the type of shock that gives rise to the highest capital requirement including the loss absorbing capacity of technical provisions and is calculated as follows:

- If $nMarket_{sp,upward}^{cd} > nMarket_{sp,downward}^{cd}$ then
  $nMarket_{sp}^{cd} = \max\left(0; nMarket_{sp,upward}^{cd}\right)$ &
  $Market_{sp}^{cd} = \max\left(0; Market_{sp,upward}^{cd}\right)$.
- If $nMarket_{sp,upward}^{cd} \leq nMarket_{sp,downward}^{cd}$ then
  $nMarket_{sp}^{cd} = \max\left(0; nMarket_{sp,downward}^{cd}\right)$ &
  $Market_{sp}^{cd} = \max\left(0; Market_{sp,downward}^{cd}\right)$.

Simplified calculations for the spread risk on bonds and loans other than residential mortgage loans

2.6.9.46. In order for simplification to be used, the following conditions must be met:

1) The simplification is proportionate to the nature, scale and complexity of the risks that the (re)insurer faces.
2) The standard calculation of the spread risk shock scenario is an undue burden for the (re)insurer.

2.6.9.47. The following simplification can be used:

$$Market_{sp}^{bonds} = MV^{bonds} \cdot \left[\sum_i \%MV_i^{bonds} \cdot stress_i + \%MV_{no\ rating}^{bonds} \cdot \min\left(1; dur_{no\ rating} \cdot 0.03\right) \right] + \Delta\ Liab_{ul}$$

Where:

- MV^{bonds} is the total market value of bond and loan portfolio;
- $\%MV_i^{bonds}$ is the proportion of bond and loans portfolio at credit quality step i;
- $stress_i$ is defined as the product of the average duration and the F^{up} spread shock factors defined in the table below;
- $\%MV_{no\ rating}^{bonds}$ is the proportion of bond and loans portfolio for which no credit quality step is available;
- $dur_{no\ rating}$ is the average duration of bond and loan portfolio for which no credit quality step is available, weighted with the market value of the bonds;
- $\Delta\ Liab_{ul}$ is the overall impact on the liability side for policies where the policyholders bear the investment risk with embedded options and guarantees of the stressed scenario, with a minimum value of 0 (In terms of sign convention, positive sign means losses).

The stressed scenario is defined as a fall in value of the assets by:

$$MV^{bonds} \cdot \left[\sum_i \%MV_i^{bonds} \cdot stress_i + \%MV_{no\ rating}^{bonds} \cdot \min\left(1; dur_{no\ rating} \cdot 0.03\right) \right]$$

where F^{up} spread shock factors are defined as:

Credit quality step	0	1	2	3	4	5	6
F^{up}	0.9%	1.1%	1.4%	2.5%	4.5%	7.5%	7.5%

2.6.10. Market risk concentrations

Description

2.6.10.1. Market risk concentrations are caused by the accumulation of exposures with the same counterparty. For the sake of simplicity and consistency, the definition of market risk concentrations regarding financial investments is restricted to this and does not include other types of concentration (e.g. geographical area, industry sector, etc.).

2.6.10.2. The scope of the concentration risk shock scenario extends to assets considered in the equity, spread and property risk shock scenarios, and excludes assets covered by the counterparty default risk shock scenario in order to avoid any overlap between both elements of the standard calculation of the SCR.

2.6.10.3. As an example, risks derived from concentration in cash held at a bank are captured in the counterparty default risk shock scenario, while risks corresponding to concentration in other bank assets should be reflected in the concentration risk shock scenario.

2.6.10.4. An appropriate assessment of concentration risks needs to consider both the direct and indirect exposures derived from the investments included in the scope of this shock scenario.

2.6.10.5. The capital requirement for market risk concentration shall be calculated on the basis of single name exposures. For this purpose, exposures to entities which belong to the same group shall be treated together as a single name exposure.

Capital Requirement

2.6.10.6. The capital requirement calculation is performed in three steps:

1) Excess exposure per single name exposure;
2) Risk concentration capital requirement per single name exposure;
3) Aggregation across single name exposures.

2.6.10.7. The excess exposure per single name exposure is calculated as:

$$XS_i = \max\left(0; \frac{E_i}{Assets_{xl}} - CT\right)$$

Where:

- XS_i is the excess exposure of single name i;
- E_i is the net exposure at default to counterparty i that is included in the calculation base of the market risk concentration shock scenario;
- $Assets_{xl}$ is the total amount of assets considered in the concentration risk shock scenario, it should not include:
  1) Assets held in respect of life insurance contracts where the investment risk is fully borne by the policyholders;
  2) Exposures an insurer or reinsurer has to a counterparty belonging to the same group, provided that the following conditions are met:

a) The counterparty is an insurer or reinsurer, an insurance holding company, a mixed financial holding company or an ancillary services company which is subject to prudential requirements;
b) The counterparty is fully consolidated in the same consolidation scope as the insurer or reinsurer;
c) The counterparty is subject to the same risk evaluation, measurement and control procedures as the insurer or reinsurer;
d) The counterparty is established in the Union;
e) There is no current or foreseen material, practical or legal impediment, to the prompt transfer of own funds or repayment of liabilities from the counterparty to the insurer or reinsurer.

3) Assets covered in the counterparty default risk shock scenario;
4) Deferred tax assets;
5) Intangible assets.

- CT is the excess exposure threshold, depending on the credit quality step of single name i, and is set as follows:

Credit quality step	Excess exposure threshold (CT)
0	3.0%
1	3.0%
2	3.0%
3	1.5%
4	1.5%
5	1.5%
6 or unrated	1.5%

2.6.10.8. The capital requirement for market risk concentration on a single name exposure, i, is calculated as the result of a pre-defined scenario:

$$Conc_i = \Delta BOF | ConcentrationShock$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin;
- $ConcentrationShock$ is the instantaneous decrease in the value of the assets corresponding to the single name exposure, i, equal to:

$$XS_i \cdot g_i$$

The parameter g_i depends on the credit quality step of the counterparty and is determined as follows:

Credit quality step	0	1	2	3	4	5	6	Unrated
Risk factor g_i	12%	12%	21%	27%	73%	73%	73%	73%

2.6.10.9. For counterparties without credit quality steps that meet the following requirements:

1) Are (re)insurers supervised by the FSA, an insurance supervisor of a country in the EU, or by an insurance supervisor in a regime which has been assessed by EIOPA as being equivalent to Solvency II;
2) Meet their MCR;
3) The solvency ratios are determined according to the requirements set out in this specification (for a (re)insurer supervised by the FSA), Solvency II (for an EU insurer) or the corresponding regime for a (re)insurer in a regime which has been assessed as being equivalent to Solvency II;
4) The solvency ratios are determined consistently to the scenario under consideration.

The parameter g_i, depending on the solvency ratio, is determined as follows:

Solvency Ratio	>196%	175%	122%	100%	≤95%
Risk factor g_i	12%	21%	27%	64.5%	73%

2.6.10.10. Where the eligible amount of own funds of a (re)insurer, to cover the SCR, falls in between the eligible amount values specified above, the value of the risk factor g_i shall be linearly interpolated from the eligible amount (solvency ratio) and risk factor values specified in the table directly above.

2.6.10.11. For other single name exposures, the parameter g_i should be 73%.

2.6.10.12. The capital requirement for concentration risk is determined assuming no correlation between the requirements for each counterparty i, and should be equal to the following:

$$Market_{conc} = \sqrt{\sum_i \left(Conc_i{}^2\right)}$$

2.6.10.13. The concentration risk shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.6.10.14. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being tested. The resulting capital requirement is $nMarket_{conc}$.

2.6.10.15. Where an insurer has more than one exposure to a counterparty, then E_i is the aggregate of those exposures at default to this counterparty considered as a single name exposure. The aggregate exposure at default across all single name exposures considered for the market risk concentration shock scenario shall be reduced by the amount of exposure at default to counterparties belonging to that single name exposure and for which the risk factor g_i for market risk concentration is 0%.

The external credit quality step of the counterparty, $rating_i$, should be a weighted average credit quality step on this single name exposure, determined as the whole number nearest to the average of the credit quality steps of the individual exposures to this counterparty, weighted by the net exposure at default in respect of that exposure to this counterparty.

2.6.10.16. The exposure at default to an individual counterparty i should comprise assets covered by the concentration risk shock scenario, including hybrid instruments, e.g. junior debt, mezzanine CDO tranches.

2.6.10.17. Exposures via investment funds or such entities whose activity is mainly the holding and management of an insurer's own investment need to be considered on a look-through basis. The same holds for CDO tranches and similar investments embedded in 'structured products'. The concentration risk shock scenario should not be applied at the level of an investment fund but at the level of each sub-counterparty, after aggregation of exposures in each sub-counterparty at the portfolio level. If the underlying single name exposures of the investment fund cannot be determined, the concentration risk should be applied at the level of the investment fund.

Special reference to covered bonds

2.6.10.18. In order to provide covered bonds with a treatment in the concentration risk shock scenario according to their specific features, the relative excess exposure threshold, CT, should be 15% when the following requirements are met:

- The asset has a credit quality step of 0 or 1 or better;
- The covered bond must be issued by a credit institution which has its registered office in the Isle of Man or a Member State of the European Union and is subject by law to special public supervision designed to protect bond-holders. In particular, sums deriving from the issue of these bonds must be invested in conformity with the law in assets which, during the whole period of validity of the bonds, are capable of covering claims attaching to the bonds and which, in the event of failure of the issuer, would be used on a priority basis for the reimbursement of the principal and payment of the accrued interest.

Exposures in the form of covered bonds shall be considered as single name exposures, regardless of other net exposures at default to the same counterparties. Other net exposures at default to the same counterparties as the counterparties of exposures in the form of covered bonds shall be considered as separate single name counterparties.

Special reference to unrated credit institutions and financial institutions

2.6.10.19. Single name exposures for which a credit assessment by a nominated ECAI is not available, which are credit institutions and financial institutions and which meet the requirements of this technical specification shall be assigned a risk factor g_i for market risk concentration of 64.5%.

Concentration risk capital in case of immovable properties

2.6.10.20. Insurers should identify the exposures in a single property higher than 10% of 'total assets' (concentration threshold) considered in this shock scenario according to paragraphs 2.6.10.1 to 2.6.10.5.

2.6.10.21. For this purpose the insurer should take into account both properties directly owned and those indirectly owned (i.e. funds of properties), and both ownership and any other real exposure (mortgages or any other legal right regarding properties).

2.6.10.22. Properties located in the same building or sufficiently nearby should be considered a single property.

2.6.10.23. The risk concentration capital requirement per property i is calculated using an assigned risk factor g_i of 12%.

Special reference to exposures to central governments, central banks, multilateral development banks and international organisations

2.6.10.24. A risk factor of 0% should apply for the purposes of this shock scenario for exposures to:

- The Isle of Man Government;
- EU Member States;
- Central government and central banks denominated and funded in any domestic currency of an EU Member State;
- A multilateral development bank such as:
  - The International Bank for Reconstruction and Development;
  - The International Finance Corporation;
  - The Inter-American Development Bank;
  - The Asian Development Bank;
  - The African Development Bank;
  - The Council of Europe Development Bank;
  - The Nordic Investment Bank;
  - The Caribbean Development Bank;
  - The European Bank for Reconstruction and Development;
  - The European Investment Bank;
  - The European Investment Fund;
  - The Multilateral Investment Guarantee Agency;
  - The International Finance Facility for Immunisation;

- The Islamic Development Bank.

- International organisations such as:
  - The European Community;
  - The International Monetary Fund;
  - The Bank for International Settlements.
- The European Central Bank;
- Exposures that are fully, unconditionally and irrevocably guaranteed by the European Investment Bank or the European Investment Fund.

The zero risk charge referred to in this paragraph only applies to debt exposures to the named organisations, and doesn't extend to investments in entities which are owned by one of the named organisations.

2.6.10.25. For the purpose of the market risk concentration shock scenario, exposures to regional governments and local authorities established in the jurisdiction of a Member State shall be treated as exposures to the central government for which a zero capital requirement for market risk concentration applies, provided there is no difference in risk between such exposures due to the specific revenue-raising powers of the former, and specific institutional arrangements exist, the effect of which is to reduce the risk of default. Insurers should assess to what extent a regional government or a local authority fulfil these criteria.

2.6.10.26. To determine the concentration risk capital requirement for exposures to central governments and central banks denominated and funded in the domestic currency, other than those mentioned in 2.6.10.25, the following risk factors g_i should be used:

Credit quality step	0	1	2	3	4	5	6	Unrated
Risk factor g_i	0%	0%	12%	21%	27%	73%	73%	73%

Special reference to exposures to bank deposits

2.6.10.27. Bank deposits considered in the concentration risk shock scenario[6] shall be assigned a risk factor g_i for market risk concentration of 0 % to the extent that their full value is covered by a government Deposit Guarantee Scheme in the Isle of Man or European Community, the guarantee is applicable without any restrictions to the insurer and provided there is no double-counting of such guarantee in the SCR calculation.

Treatments of risks associated to SPV notes held by an insurer

2.6.10.28. SPV notes should be treated as follows:

1) SPV notes which
   a) have mostly the features of fixed-income bonds,
   b) are authorised,

[6] Risks derived from concentration in cash held at a bank are captured in the counterparty default risk capital requirement therefore not subject to the concentration risk shock scenario.

c) are issued by an SPV which is an entity, other than an insurer or reinsurer, which assumes risks from insurers or reinsurers and which fully funds its exposure to such risks through the proceeds of a debt issuance or any other financing mechanism where the repayment rights of the providers of such debt or financing are subordinated to the reinsurance obligations of the SPV, and

d) has credit quality step 3 or better.

The risks of such notes should be considered in the spread, interest rate and concentration risk shock scenarios according to their credit quality step.

2) Other SPV notes, including those having significant features of equities (i.e. equity tranche notes).

The risks of such notes should be considered in the equity risk shock scenario. For this purpose the SPV notes should be considered as non-traded equities, unless they are traded actively in a financial market.

2.7. Counterparty default Risk

2.7.1. Description

2.7.1.1. Counterparty default risk is caused by the unexpected default, or deterioration in the credit standing, of an insurer's or reinsurer's counterparties and debtors.

2.7.1.2. The counterparty default risk shock scenario should reflect possible losses due to unexpected defaults of counterparties and debtors of insurers over the forthcoming twelve months. The scope of the counterparty default risk shock scenario includes risk-mitigating contracts, such as reinsurance arrangements, securitisations and derivatives; receivables from intermediaries; as well as any other credit exposures which are not covered in the spread risk capital requirement calculation.

2.7.1.3. Where liabilities for employee benefits are recognised, these should be taken into account in the calculation of the capital requirements for counterparty default risk and for the shock scenarios used in the calculation of market risk. For this purpose, insurers should take into account the nature of the benefits and, where relevant, the nature of all contractual arrangements with an institution for occupational retirement provision or another insurer or reinsurer for the provision of these benefits.

2.7.1.4. If the management of the assets covering the liabilities for employee benefits has been outsourced, an insurer acting as a sponsor should take them into account in the calculation of the capital requirements for the counterparty default risk and for the shock scenarios used in the calculation of market risk, provided it is liable for any loss in value of these assets.

2.7.1.5. For each counterparty, the counterparty default risk shock scenario should take account of the overall counterparty risk exposure of the insurer concerned to that counterparty, irrespective of the legal form of its contractual obligations to that counterparty.

2.7.1.6. A differentiation of two classes of exposure, denoted by Type 1 and Type 2, is made and a different treatment according to their characteristics is applied.

2.7.1.7. The Type 1 class covers exposures which may not be diversified and where the counterparty is likely to be rated. The class therefore consists of exposures in relation to:

1) Risk-mitigation contracts including reinsurance arrangements, insurance securitisations and derivatives;
2) Cash at bank;
3) Deposits with ceding insurers, where the number of single name exposures does not exceed 15;
4) Commitments received by an insurer or reinsurer which have been called up but are unpaid, where the number of single name exposures does not exceed 15. This includes called up but unpaid ordinary share capital and preference shares; called up but unpaid legally binding commitments to subscribe and pay for subordinated liabilities; called up but unpaid initial funds; called up but unpaid guarantees; called up but unpaid letters of credit;
5) Legally binding commitments which the insurer has provided or arranged and which may create payment obligations depending on the credit standing or default on a counterparty. These include guarantees, letters of credit and letters of comfort that the insurer has provided.

For determining the number of independent counterparties, counterparties which belong to the same group should not be treated as independent counterparties.

2.7.1.8. The capital requirement for securities lending arrangements and securities repurchase arrangements should follow the recognition of items exchanged in the regulatory balance sheet, also taking into account contractual terms and risks stemming from the agreement.

If a lent asset remains on the balance sheet, and the asset received is not recognised, the relevant market risk capital requirements should be applied to the lent asset. In addition, a counterparty default risk charge (Type 1 exposures) should apply to the lent asset, taking into account the risk-mitigation provided by the asset received if the latter is recognised as collateral.

If the lent asset does not remain on the balance sheet and the asset received is recognised, the relevant market risk charges should be applied to the asset received. In addition, if, following the contractual terms of the lending arrangement and the legal provisions applying in case of insolvency of the borrower, there is a risk that the lent asset is not given back to the lender at the end of the arrangement, although the received asset has been returned to the borrower, then a capital charge for counterparty default risk should be calculated, based on the initial value of the lent asset.

In cases where the lent asset and the asset received are both recognised on the balance sheet, the relevant market risk charges should be applied to both. In addition, a counterparty default risk charge should apply to the lent asset, taking into account the risk mitigation provided by the asset received if the latter is recognised as collateral.

If the lending arrangement results in the creation of a liability on the balance sheet, the insurer or reinsurer should consider this liability when calculating the interest rate risk capital requirement.

2.7.1.9. The Type 2 class covers exposures of types which are usually diversified and where the counterparty is likely to be unrated. The class of Type 2 exposures therefore consists of all exposures which are not covered in the spread risk shock scenario, are in the scope of the counterparty default risk shock scenario and are not in the Type 1 class, in particular:

1) Receivables from intermediaries;
2) Policyholder debtors;
3) Residential mortgage loans that meet the requirements set out in 2.7.6.2;
4) Deposits with ceding insurers, where the number of single name exposures exceeds 15;
5) Commitments received by an insurer or reinsurer which have been called up but are unpaid as referred to in 2.7.1.7 4), where the number of single name exposures exceeds 15.

2.7.1.10. Insurers and reinsurers may, at their discretion, consider all exposures referred to in points 4) and 5) of 2.7.1.7 above as Type 1 exposures, regardless of the number of single name exposures.

2.7.1.11. Where a letter of credit, a guarantee or an equivalent risk mitigation technique has been provided to fully secure an exposure and this risk mitigation technique meets the requirements of section 2.13.2 – 'Conditions for using financial risk mitigation techniques', then the provider may be considered as the counterparty on the secured exposure for the purpose of assessing the number of single name exposures.

2.7.1.12. The following credit risks shall not be covered in the counterparty default risk shock scenario:

1) The credit risk transferred by a credit derivative;
2) The credit risk on debt issuance by special purpose vehicles;
3) The underwriting risk of credit and surety ship insurance or reinsurance.

2.7.1.13. Where insurance contracts written by an insurer contain investment guarantees provided to policyholders by a third party and for which the insurer or reinsurer would be liable should the third party default these externally-provided guarantees shall be treated as derivatives in the counterparty default risk shock scenario.

2.7.2. Capital requirement

2.7.2.1. The capital requirements relating to counterparty default risk should be calculated separately for Type 1 and Type 2 exposures. The capital requirements are then aggregated as follows:

$$SCR_{default} = \sqrt{\mathrm{SCR}_{default,1}^2 + 1.5 \cdot \mathrm{SCR}_{default,1} \cdot \mathrm{SCR}_{default,2} + \mathrm{SCR}_{default,2}^2}$$

Where:

- $SCR_{default}$ is the capital requirement for counterparty default risk;
- $\mathrm{SCR}_{default,1}$ is the capital requirement for counterparty default risk of Type 1 exposures;
- $\mathrm{SCR}_{default,2}$ is the capital requirement for counterparty default risk of Type 2 exposures.

2.7.2.2. The counterparty default risk shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.7.2.3. Additionally, insurers should determine the capital requirement for counterparty default risk including the risk absorbing capacity of technical provisions $nSCR_{default}$ as the loss in net asset value resulting from a counterparty default loss of the amount $SCR_{default}$. The result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that insurers are able to vary its assumptions in future bonus rates in response to the shock being tested.

2.7.3. Calculation of capital requirement for Type 1 exposures

2.7.3.1. The main inputs of the counterparty default risk shock scenario are the estimated loss-given-default (LGD) of an exposure and the probability of default (PD) of the counterparty. Given these for the portfolio of Type 1 exposures, the capital requirement is calculated as follows:

$$SCR_{default,1} = \begin{cases} 3 \cdot \sqrt{\mathrm{V}}, & if\ \sqrt{\mathrm{V}} \leq 5\% \cdot \sum_i \mathrm{LGD}_i \\ 5 \cdot \sqrt{\mathrm{V}}, & if\ 5\% \cdot \sum_i \mathrm{LGD}_i < \sqrt{\mathrm{V}} \leq 20\% \cdot \sum_i \mathrm{LGD}_i \\ \sum_i \mathrm{LGD}_i & if\ 20\% \cdot \sum_i \mathrm{LGD}_i \leq \sqrt{\mathrm{V}} \end{cases}$$

Where:

- The sum is taken over all independent counterparties with Type 1 exposures;
- LGD_i is the loss-given-default for Type 1 exposure of counterparty i;
- V is the variance of the loss distribution of the Type 1 exposures;
- $\sqrt{\mathrm{V}}$ is the standard deviation of the loss distribution of the Type 1 exposures.

2.7.3.2. The variance V of the loss distribution of Type 1 exposure shall be equal to the sum of V_{inter} and V_{intra}.

2.7.3.3. V_{inter} shall be equal to the following:

$$V_{inter} = \sum_{(j,k)} \frac{PD_k \cdot (1 - PD_k) \cdot PD_j \cdot (1 - PD_j)}{1.25 \cdot (PD_k + PD_j) - (PD_k \cdot PD_j)} \cdot TLGD_j \cdot TLGD_k$$

Where:

- The sum covers all possible combinations (j, k) of different probabilities of default on single name exposures;
- $TLGD_j$ and $TLGD_k$ denote the sum of losses-given-default on Type 1 exposures from counterparties bearing a probability of default PD_j and PD_k respectively.

2.7.3.4. V_{intra} shall be equal to the following:

$$V_{intra} = \sum_{j} \frac{1.5 \cdot PD_j \cdot (1 - PD_j)}{2.5 - PD_j} \cdot \sum_{PD_j} {LGD_i}^2$$

Where:

- The first sum covers all different probabilities of default on single name exposures;
- The second sum covers all single name exposures that have a probability of default equal to PD_j;
- LGD_i denotes the loss-given-default on the single name exposure i.

2.7.3.5. PD_i denotes the probability of default, regarding a credit exposure i for which a credit assessment by a nominated external credit assessment institution (ECAI) is available. The values of PD_i should be set as follows:

Credit quality step	0	1	2	3	4	5	6
Probability of Default (PD_i)	0.002%	0.01%	0.05%	0.24%	1.20%	4.2%	4.2%

2.7.3.6. In cases where more than one rating is available for a counterparty, the second highest rating should be used.

Counterparties without a credit quality step

2.7.3.7. For counterparties without credit quality steps that meet the following requirements:

1) Are insurers or reinsurers supervised by the FSA or by a supervisor in the European Union or by a supervisor in a regulatory regime which has been assessed by EIOPA as equivalent to Solvency II;
2) Meet their MCR;

3) Have solvency ratios determined according to the requirements set out in these specifications, Solvency II or a regime which has been assessed as equivalent to Solvency II;
4) Have solvency ratios determined consistently to the scenario under consideration.

The credit quality step and the Probability of Default (PD_i), depending on the solvency ratio is determined as follows:

Solvency ratio	≥196%	≥175%	≥122%	≥95%	≥75%	<75%
Credit quality step	1	2	3	4	5	6
Probability of Default (PD_i)	0.01%	0.05%	0.24%	1.2%	4.2%	4.2%

2.7.3.8. For unrated counterparties that are insurers or reinsurers and that do not meet their MCR, the credit quality step shall be 6 and the probability of default shall be 4.2%.

2.7.3.9. For all other unrated counterparties, the credit quality step shall be 6 and the probability of default shall be 4.2%.

Counterparties which belong to the same group

2.7.3.10. If an insurer has more than several counterparties which are not independent (for example because they belong to one group) then it is necessary to assign a probability of default to the whole set of dependent counterparties. This overall probability of default should be the average probability of the counterparties, weighted with the corresponding losses-given-default.

2.7.4. Loss-given-default ('LGD') for risk mitigating contracts

2.7.4.1. The LGD of an exposure is conceptually defined to be the loss of basic own funds which the insurer would incur if the counterparty defaulted.

2.7.4.2. In case of default, typically a part of the exposure can still be collected. In order to allow for the potential recovery of the counterparty, the LGD is amended by a factor *(1 – RR)* where *RR* denotes the recovery rate of the counterparty. The recovery rate may be different for reinsurance arrangements and securitisations on one hand and for derivatives on the other hand.

2.7.4.3. For a reinsurance arrangement or securitisation i, a RR of 50% is assumed. The loss-given-default, LGD_i, should, therefore, be calculated as follows:

$$LGD_i = \max\left(0; 50\% \cdot \left(Recoverables_i + 50\% \cdot RM_{re,i}\right) - F \cdot Collateral_i\right)$$

Where:

- $Recoverables_i$ are the best estimate recoverables from the reinsurance contract (or SPV), i, plus any other debtors arising out of the reinsurance arrangement or SPV securitisation;

- $RM_{re,i}$ is the risk mitigating effect on underwriting risk of the reinsurance arrangement or SPV securitisation, i;
- $Collateral_i$ is the risk-adjusted value of collateral in relation to the reinsurance arrangement or SPV securitisation, i;
- F is a factor to take into account the economic effect of the collateral arrangement in relation to the reinsurance arrangement or securitisation in case of any credit event related to the counterparty i. If in the case of the insolvency of the counterparty the determination of the insurer's or reinsurer's insolvency estate in excess of the collateral does not take into account that the insurer or reinsurer receives collateral, the F factor shall be 100%, else it shall be 50%.

2.7.4.4. The best estimate of the $Recoverables_i$ might be netted with liabilities towards the same legal entity to the extent they could be set off in case of the default of the legal entity. However, if a reinsurance counterparty has tied up an amount for collateralisation commitments (both on and off balance sheet) greater than 60% of the assets on its balance sheet, the RR is assumed to be 10%. The loss-given-default LGD_i should, therefore, be calculated as follows:

$$LGD_i = \max\left(0; 90\% \cdot \left(Recoverables_i + 50\% \cdot RM_{re,i}\right) - F \cdot Collateral_i\right)$$

Where if in the case of the insolvency of the counterparty the determination of the insurer's or reinsurer's insolvency estate in excess of the collateral does not take into account that the insurer or reinsurer receives collateral, the F factor shall be 100%, else it shall be 50%.

2.7.4.5. For a derivative i, the RR is assumed to be 10%. The loss-given-default LGD_i should be calculated as follows:

$$LGD_i = \max\left(0; 90\% \cdot \left(MarketValue_i + RM_{fin,i}\right) - F' \cdot Collateral_i\right)$$

Where:

- $MarketValue_i$ is the value of the derivative i;
- $RM_{fin,i}$ is the risk mitigating effect on market risk of the derivative i;
- $Collateral_i$ is the risk-adjusted value of collateral in relation to the derivative i;
- F' is a factor to take into account the economic effect of the collateral arrangement in relation to the derivative in the case of any credit event related to the counterparty i. If in the case of the insolvency of the counterparty the determination of the insurer's or reinsurer's insolvency estate in excess of the collateral does not take into account that the insurer or reinsurer receives collateral, the F' factor shall be 100%, otherwise it shall be 90%.

2.7.4.6. For a mortgage loan i, the loss-given-default LGD_i should be calculated as follows:

$$LGD_i = \max(0; Loan_i - Mortgage_i)$$

Where:

- $Loan_i$ is the value of the mortgage loan i;

- $Mortgage_i$ is the risk-adjusted value of the mortgage in relation to the mortgage loan i.

Calculation of the risk-adjusted value of mortgage

2.7.4.7. The risk-adjusted value of mortgage referred to in 2.7.4.6 shall be equal to the difference between the value of the residential property held as mortgage, valued in accordance with 2.7.4.4 and the adjustment for market risk, as referred to in 2.7.4.9.

2.7.4.8. The value of the residential property held as mortgage shall be the market value, reduced as appropriate, to reflect the results of the monitoring required under the requirements listed below and to take account of any prior claims on the property.

1) The insurer or reinsurer monitors the value of the property on a frequent basis and at a minimum once every three years. The insurer or reinsurer carries out more frequent monitoring where the market is subject to significant changes in conditions;

2) The property valuation is reviewed when information available to the insurer or reinsurer indicates that the value of the property may have declined materially relative to general market prices. That review is external, independent and carried out by a valuer who possesses the necessary qualifications, ability and experience to execute a valuation and who is independent from the credit decision process.

For the purposes of 1) and 2), insurers or reinsurers may use statistical methods to monitor the value of the property and to identify property that needs revaluation. The external, independent valuation of the property shall be the same or less than the market value.

2.7.4.9. The adjustment for market risk referred to in 2.7.4.7 is the difference between the following capital requirements:

1) The hypothetical capital requirement for market risk of the insurer or reinsurer that would apply if the residential property held as mortgage were not included in the calculation; and

2) The hypothetical capital requirement for market risk of the insurer or reinsurer that would apply if the residential property held as mortgage were included in the calculation.

2.7.4.10. For the purpose of 2.7.4.8, the currency risk of the residential property held as mortgage shall be calculated by comparing the currency of the residential property against the currency of the corresponding loan.

Calculation of the risk mitigating effect

2.7.4.11. The risk mitigating effects $RM_{re,i}$ and $RM_{fin,i}$ are defined as the difference between the following two capital requirements:

1) The hypothetical capital requirement for underwriting and market risk under the condition that the risk mitigating effect of the reinsurance arrangement, SPV or derivative of a particular counterparty is not taken into account in its calculation (SCR^{hyp}). These values are only determined for the purpose of the counterparty default risk shock scenario;
2) The capital requirements for underwriting risk and market risk without any amendments ($SCR^{without}$). These are the requirements as defined in the sections on underwriting risks and market risk. They are available as soon as the calculations of the particular shock scenarios have been made.

2.7.4.12. The hypothetical capital requirement in relation to counterparty i is determined by a recalculation of the shock scenarios which are affected by the risk mitigating contracts with that counterparty. This should be done for life reinsurance and for derivatives as follows:

1) The scenario outcome should be reassessed assuming that the risk-mitigating contract with counterparty i will not provide any compensation for the losses incurred under the scenario;
2) In particular, if a module of the SCR did not allow for the risk mitigating effect of the risk-mitigating contract with counterparty i in the calculation of the capital requirement without any amendments, the two capital requirements coincide and $RM_{re,i}$ and $RM_{fin,i}$ are zero.

2.7.4.13. Where a risk mitigation instrument transfers both underwriting risk and market risk, the risk mitigating effect should be given by the aggregation between the risk-mitigation effect in relation to underwriting risk and the risk-mitigating effect in relation to market risk.

2.7.5. Loss-given-default for Type 1 exposures other than risk mitigating contracts

2.7.5.1. For cash at bank, deposits with ceding institutions and unpaid but called up capital, the loss-given-default should be the value of the corresponding asset.

2.7.5.2. For guarantees, letters of credit, letters of comfort and other commitments which depend on the credit standing of a counterparty, the loss-given default should be the difference between their nominal value and their value in the regulatory balance sheet.

2.7.5.3. If in relation to a counterparty, more than one Type 1 exposure exists, then the loss-given-default for this counterparty should be the sum of the losses-given-default of the single exposures.

2.7.6. Calculation of capital requirement for Type 2 exposures

2.7.6.1. The capital requirement for counterparty default risk of Type 2 exposures is determined as the result of the following pre-defined scenario:

$$SCR_{default,2} = \Delta BOF | Type2CounterpartyDefaultShock$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin;
- $Type2CounterpartyDefaultShock$ is the instantaneous decrease in the value of Type 2 exposures by the following amount:

$$0.9 \cdot LGD_{receivables>3\ months} + 0.15 \cdot \sum_i LGD_i$$

And:

  - $LGD_{receivables>3\ months}$ is the total losses-given-default on all receivables from intermediaries which have been due for more than three months;
  - The sum is taken on all Type 2 exposures other than receivables from intermediaries which have been due for more than three months;
  - LGD_i is the loss-given-default on the Type 2 exposure i.

Requirements for mortgage loans to be treated as Type 2 exposures

2.7.6.2. Retail loans secured by mortgages on residential property (mortgage loans) shall be treated as Type 2 exposures under the counterparty default risk shock scenario provided that the following requirements are met:

1) The exposure shall be either to a natural person or persons or to a small or medium sized enterprise;
2) The exposure shall be one of a significant number of exposures with similar characteristics such that the risks associated with such lending are substantially reduced;
3) The total amount owed to the insurer or reinsurer and, where relevant, to all related entities within the meaning of 2.6.4.3, including any exposure in default, by the counterparty or other connected third party, shall not, to the knowledge of the insurer or reinsurer, exceed £1 million. The insurer or reinsurer shall take reasonable steps to acquire this knowledge;
4) The residential property is, or shall be, occupied or let by the owner;
5) The value of the property does not materially depend upon the credit quality of the borrower;
6) The risk of the borrower does not materially depend upon the performance of the underlying property, but on the underlying capacity of the borrower to repay the debt from other sources. As a consequence, the repayment of the facility does not materially depend on any cash flow generated by the underlying property serving as collateral. For those other sources, the insurer or reinsurer shall determine maximum loan-to-income ratio as part of their lending policy and obtain suitable evidence of the relevant income when granting the loan;

7) The following requirements on legal certainty shall be met:
   a) A mortgage or charge is enforceable in all jurisdictions which are relevant at the time of the conclusion of the credit agreement and shall be properly filed on a timely basis;
   b) All legal requirements for establishing the pledge have been fulfilled;
   c) The protection agreement and the legal process underpinning it enable the insurer or reinsurer to realise the value of the protection within a reasonable timeframe.

2.7.7. Treatment of risk mitigation techniques

2.7.7.1. The counterparty default risk shock scenario should take into account techniques to mitigate default risk like collaterals or netting of receivables with liabilities. Allowance should be made as follows:

Collaterals

2.7.7.2. A 'collateral arrangement' means an arrangement under which either:

1) A collateral provider transfers full ownership of the collateral to the collateral taker for the purpose of securing or otherwise covering the performance of a relevant obligation; or
2) A collateral provider provides collateral by way of security in favour of, or to, a collateral taker, and the legal ownership of the collateral remains with the collateral provider or a custodian when the security right is established.

2.7.7.3. If a collateral meets the two following requirements:

1) The legal mechanism by which collateral is pledged or transferred should ensure that the insurer has the right to liquidate or take legal possession of the collateral, in a timely manner, in case of any default event related to the counterparty ("the counterparty requirement");
2) Where applicable, the legal mechanism by which collateral is pledged or transferred should ensure that the insurer has the right to liquidate or take possession of the collateral, in a timely manner, in case of any default event related to a third party custodian holding the collateral ("the custodian requirement").

Then the loss-given-default (in case of a Type 1 exposure) or the value of the exposure (in case of a Type 2 exposure) may be reduced by the risk-adjusted value of the collateral.

2.7.7.4. The risk-adjusted value of the collateral should be calculated as follows, in cases where both the counterparty requirements and the custodian requirements are met or in cases where full ownership of the risk-adjusted value of the collateral is transferred to the insurer or reinsurer:

$$Collateral = MarketValue_{Collateral} - MarketRisk_{Collateral}$$

Where:

- $MarketValue_{Collateral}$ is the market value of the collateral assets;
- $MarketRisk_{Collateral}$ is the adjustment for market risk.

2.7.7.5. If the collateral is held by or deposited with a third party custodian and the collateral only meets the counterparty requirement, then the risk-adjusted value of the collateral should be calculated as follows:

$$Collateral = 0.9 \cdot (MarketValue_{Collateral} - MarketRisk_{Collateral})$$

2.7.7.6. The adjustment for market risk is the difference between the following capital requirements:

1) The hypothetical capital requirement for market risk of the insurer or reinsurer that would apply if the assets held as collateral are not included in the calculation; and
2) The hypothetical capital requirement for market risk of the insurer or reinsurer that would apply if the assets held as collateral are included in the calculation.

2.7.7.7. If a collateral does not meet the counterparty requirement, then it should not be taken into account as a risk mitigant.

2.7.7.8. For the calculation of the adjustment for market risk, the reduction of the market value of the collateral according to the equity, property, credit spread and currency risk shock scenarios should be determined and aggregated according to the correlation matrix of the market risk capital calculation.

2.7.7.9. For the calculation of the currency risk shock scenario, the currency of the collateral is compared to the currency of the secured credit exposure. If the collateral assets are bank deposits which are not subject to the credit spread risk, the adjustment should be increased by the capital requirement for counterparty default risk of the deposits.

Segregated assets

2.7.7.10. Where, and to the extent that, the liabilities of the counterparty are covered by strictly segregated assets under arrangements which meet the requirements set out in section 2.12 – 'Financial Risk mitigation', the segregated assets should be treated like collaterals in the calculation of the counterparty default risk shock scenario.

Letters of credit

2.7.7.11. If a letter of credit is provided to secure a credit exposure and the arrangement meets the requirement defined in section 2.12 – 'Financial Risk mitigation', then the counterparty of the credit exposure can be replaced by the provider of the letter of credit in the calculation of the counterparty default risk shock scenario. This replacement affects the probability of default that is taken into account in the calculation as well as the assessment whether the counterparty is independent from other counterparties.

2.7.7.12. A letter of credit should not be taken into account in the calculation of the counterparty default risk shock scenario if it is classified as ancillary own funds.

Netting

2.7.7.13. The loss-given-default (in case of a Type 1 exposure) or the value of the exposure (in case of a Type 2 exposure) may be netted with liabilities towards the same legal entity to the extent that they could be offset in case of default of the legal entity. The general requirement defined in sections 2.12 – 'Financial Risk mitigation' and 2.14 – 'Insurance Risk mitigation', should be met in relation to netting if it is taken into account in the calculation. In particular, if the legal situation in relation to netting is unclear, then no netting should be taken into account. No netting should be allowed for if the liabilities are expected to be met before the credit exposure is cleared.

2.7.8. Possible simplifications for risk mitigating effects and risk adjusted values of risk mitigating contracts

Simplifications for the calculation of loss-given-default for risk mitigating contracts – (Type 1 exposure)

2.7.8.1. Insurers may, with prior permission from the FSA, use simplified calculations for the risk-mitigating effect on underwriting and market risks of a reinsurance arrangement, securitisation or derivative. These simplifications should only be used if the following conditions are met:

1) There are no indications that the simplification significantly misestimates the risk mitigating effect;
2) The result of the sophisticated calculation is not easily available.

2.7.8.2. In this case, the simplifications may be calculated as the difference between the following capital requirements:

1) The sum of the hypothetical capital requirement for the shock scenarios of underwriting and market risk of the insurer or reinsurer affected by the risk-mitigating instrument, if the reinsurance arrangement, securitisation or derivative did not exist;
2) The sum of the capital requirements for the shock scenarios of underwriting and market risk of the insurer or reinsurer affected by the risk-mitigating instrument.

Simplified calculation of the risk mitigating effect for reinsurance arrangements or securitisation

2.7.8.3. The risk-mitigating effect on underwriting risk of a reinsurance arrangement or securitisation i may, with prior permission from the FSA, be calculated as follows:

$$RM_{re,all} \cdot \frac{Recoverables_i}{Recoverables_{all}}$$

Where:

- $RM_{re,all}$ is the risk mitigating effect on underwriting risk of the reinsurance arrangements and securitisations for all counterparties calculated in accordance with 2.7.8.4 below;

- $Recoverables_i$ is the best estimate of amounts recoverable from the reinsurance arrangement or securitisation and the corresponding debtors for counterparty i;
- $Recoverables_{all}$ is the best estimate of amounts recoverable from the reinsurance arrangements and securitisations and the corresponding debtors for all counterparties.

2.7.8.4. The risk mitigating effect on underwriting risk of the reinsurance arrangements and securitisations for all counterparties referred to in 2.7.8.3 is the difference between the following capital requirements:

1) The hypothetical capital requirement for underwriting risk of the insurer or reinsurer if none of the reinsurance arrangements and securitisations exist;
2) The capital requirements for underwriting risk of the insurer or reinsurer.

2.7.8.5. The risk-mitigating effect on underwriting risk j of a proportional reinsurance arrangement from counterparty i may be calculated as follows:

$$\frac{Recoverables_i}{BE - Recoverables_{all}} \cdot SCR_j$$

Where:

- BE is the best estimate of obligations gross of the amounts recoverable;
- $Recoverables_i$ is the best estimate of amounts recoverable from the reinsurance arrangement and the corresponding debtors for counterparty i;
- $Recoverables_{all}$ is the best estimate of amounts recoverable from the reinsurance arrangements and the corresponding debtors for all counterparties;
- SCR_j is the capital requirements for underwriting risk j of the insurer or reinsurer.

2.7.8.6. A simplified calculation can be used for the risk adjusted value of collateral to take into account the economic effect of the collateral. If it is proportionate to the nature, scale and complexity of the risks inherent in the collateral arrangement that meets both the counterparty and the custodian requirements, and with prior permission from the FSA, a simplification as follows can be applied:

$$Collateral = 0.85 \cdot MarketValue_{Collateral}$$

2.7.8.7. Where the collateral is held by or deposited with a third party custodian and the collateral only meets the counterparty requirement, a simplification as follows can be applied:

$$Collateral = 0.75 \cdot MarketValue_{Collateral}$$

2.8. Life Underwriting Risk

2.8.1. Structure of the life underwriting risk capital requirement

2.8.1.1. This section covers the risk arising from the underwriting of life insurance and is associated with both the perils covered and the processes followed in the conduct of business.

2.8.1.2. The scope of the life underwriting risk capital requirement includes all the life insurance and reinsurance obligations as defined in paragraph 1.2.2.6 on segmentation.

2.8.1.3. The calculations of capital requirements in the life underwriting risk section are based on specified scenarios. General guidance about the interpretation of the scenarios can be found in subsection 2.1.

2.8.2. Description

2.8.2.1. The life underwriting risk capital requirement is calculated using the input from seven shock scenarios that aim to establish the exposure of the participating insurer to mortality, longevity, disability, morbidity, lapse, expense, revision and catastrophe risk.

2.8.2.2. The shock scenarios provide the following information:

- $Life_{mortality}$ is the capital requirement for mortality risk;
- $Life_{longevity}$ is the capital requirement for longevity risk;
- $Life_{dis+morb}$ is the capital requirement for disability and morbidity risk;
- $Life_{lapse}$ is the capital requirement for lapse risk;
- $Life_{expense}$ is the capital requirement for expense risk;
- $Life_{revision}$ is the capital requirement for revision risk;
- $Life_{CAT}$ is the capital requirement for life catastrophe risk;
- $nLife_{mortality}$ is the capital requirement for mortality risk including the loss absorbing capacity of technical provisions;
- $nLife_{longevity}$ is the capital requirement for longevity risk including the loss absorbing capacity of technical provisions;
- $nLife_{dis+morb}$ is the capital requirement for disability and morbidity risk including the loss absorbing capacity of technical provisions;
- $nLife_{lapse}$ is the capital requirement for lapse risk including the loss absorbing capacity of technical provisions;
- $nLife_{expense}$ is the capital requirement for expense risk including the loss absorbing capacity of technical provisions;
- $nLife_{revision}$ is the capital requirement for revision risk including the loss absorbing capacity of technical provisions;
- $nLife_{CAT}$ is the capital requirement for life catastrophe risk including the loss absorbing capacity of technical provisions.

2.8.3. Capital Requirement

2.8.3.1. The capital requirement relating to life underwriting risk is calculated by combining the capital requirements listed in 2.8.2.2 using a correlation matrix as follows:

$$SCR_{life} = \sqrt{\sum_{r,c} LifeCorr_{r,c} \cdot Life_r \cdot Life_c}$$

Where:

- $LifeCorr_{r,c}$ are the entries of the correlation matrix $LifeCorr$;
- $Life_r$ and $Life_c$ are the capital requirements for the individual life shock scenarios according to the rows and columns of the correlation matrix $LifeCorr$;
- $LifeCorr$ is defined as:

$LifeCorr$	Mortality	Longevity	Disability	Lapse	Expenses	Revision	CAT
Mortality	1	-0.25	0.25	0	0.25	0	0.25
Longevity	-0.25	1	0	0.25	0.25	0.25	0
Disability	0.25	0	1	0	0.5	0	0.25
Lapse	0	0.25	0	1	0.5	0	0.25
Expenses	0.25	0.25	0.5	0.5	1	0.5	0.25
Revision	0	0.25	0	0	0.5	1	0
CAT	0.25	0	0.25	0.25	0.25	0	1

2.8.3.2. The net capital requirement relating to life underwriting risk is determined as follows:

$$nSCR_{life} = \sqrt{\sum_{r,c} LifeCorr_{r,c} \cdot nLife_r \cdot nLife_c}$$

Where $nLife_{revision}$ is defined to be equal to $Life_{revision}$.

2.8.4. Mortality Risk

Description

2.8.4.1. Mortality risk is caused by the sensitivity of insurance and reinsurance liabilities to fluctuations in the level, trend or volatility of mortality rates, where an increase in the mortality rates leads to an increase in the value of technical provisions.

2.8.4.2. Mortality risk is associated with (re)insurance obligations (such as term assurance or endowment policies) where a (re)insurer guarantees to make a single or recurring series of payments in the event of the death of the policyholder during the policy term.

2.8.4.3. The mortality shock scenario is applicable for (re)insurance obligations contingent on mortality risk, i.e. where the amount currently payable on death exceeds the technical provisions held and, as a result, an increase in mortality rates leads to an increase in the technical provisions.

2.8.4.4. Where (re)insurance obligations provide benefits both in case of death and survival and these benefits are contingent on the life of the same insured person(s), these obligations do not then need to be unbundled. For these contracts, the mortality shock scenario can be applied fully, allowing for the netting effect provided by the 'natural' hedge between the death benefits component and the survival benefits component. Note that a floor of zero applies at the contract level if the net result of the scenario is favourable to the (re)insurer.

2.8.4.5. The increase in mortality rates shall only apply to those insurance policies as described above, taking into account the following:

1) Multiple insurance policies in respect of the same insured person may be treated as if they were one policy.
2) Where model points are used for the purposes of calculating the technical provisions, and the grouping of data captures appropriately the mortality risk of the portfolio, each model point can be considered to represent a single policy for the purposes of applying the mortality shock scenario.

2.8.4.6. With regard to reinsurance obligations, the identification of the policies for which technical provisions increase under the mortality shock scenario shall apply to the underlying insurance policies only and shall be carried out in accordance with paragraph 2.8.4.5.

Capital Requirement

2.8.4.7. The capital requirement relating to mortality risk is calculated as follows:

$$Life_{mortality} = \Delta BOF | MortalityShock$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $MortalityShock$ is an instantaneous permanent increase of 15% in all mortality rates used for the calculation of technical provisions, irrespective of the time period to which they refer. The stressed mortality rates should not exceed a value of 1.

2.8.4.8. The mortality shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.8.4.9. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock scenario being applied. The resulting capital requirement is $nLife_{mortality}$.

2.8.5. Longevity Risk

Description

2.8.5.1. Longevity risk is caused by the sensitivity of insurance and reinsurance liabilities, to fluctuations in the level, trend or volatility of mortality rates, where a decrease in mortality rates leads to an increase in the value of technical provisions.

2.8.5.2. Longevity risk is associated with (re)insurance obligations (such as annuities) where a (re)insurer guarantees to make a recurring series of payments until the death of the policyholder and where a decrease in mortality rates leads to an increase in the technical provisions, or with (re)insurance obligations (such as pure endowments) where a (re)insurer guarantees to make a single payment in the event of survival of the policyholder for the duration of the policy term.

2.8.5.3. The longevity shock scenario is applicable for (re)insurance obligations contingent on longevity risk, i.e. where there is no death benefit, or, the amount currently payable on death is less than the technical provisions held and, as a result, a decrease in mortality rates is likely to lead to an increase in technical provisions.

2.8.5.4. Where (re)insurance obligations provide benefits both in case of death and survival and these benefits are contingent on the life of the same insured person(s), these obligations do not then need to be unbundled. For these contracts, the longevity shock scenario can be applied fully, allowing for the netting effect provided by the 'natural' hedge between the death benefits component and the survival benefits component. Note that a floor of zero applies at the contract level if the net result of the scenario is favourable to the (re)insurer.

2.8.5.5. The decrease in mortality rates shall only apply to those insurance policies as described above, taking into account the following:

1) Multiple insurance policies in respect of the same insured person may be treated as if they were one policy.
2) Where model points are used for the purposes of calculating the technical provisions, and the grouping of data captures appropriately the longevity risk of the portfolio, each model point can be considered to represent a single policy for the purposes of applying the longevity shock scenario.

2.8.5.6. With regard to reinsurance obligations, the identification of the policies for which technical provisions increase under the longevity shock scenario shall apply to the underlying insurance policies only and shall be carried out in accordance with paragraph 2.8.5.5.

Capital Requirement

2.8.5.7. The capital requirement relating to longevity risk is calculated as follows:

$$Life_{longevity} = \Delta BOF | LongevityShock$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.

- $LongevityShock$ is an instantaneous permanent decrease of 20% in all mortality rates used for the calculation of technical provisions, irrespective of the time period to which they refer.

2.8.5.8. The longevity shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.8.5.9. Additionally, the result of the shock scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nLife_{longevity}$.

2.8.6. Disability & Morbidity Risk

Description

2.8.6.1. Disability and morbidity risk is caused by the sensitivity of insurance and reinsurance liabilities to fluctuations in the level, trend or volatility of disability and morbidity rates.

2.8.6.2. The disability shock scenario is applicable for (re) insurance obligations contingent on a definition of disability, for example, income protection products.

2.8.6.3. The morbidity shock scenario is applicable for (re)insurance obligations contingent on a definition of morbidity, for example, critical illness products.

2.8.6.4. The (re)insurance obligations may be structured such that, upon the diagnosis of a disease or a critical illness, or in the case that the policyholder is unable to pursue professional activity as a result of sickness or disability, recurring payments are triggered. These payments may continue until the expiry of some defined period of time, or until either the recovery or death of the policyholder. In the latter case, the insurer or reinsurer is also exposed to the risk that policyholders receive payments for longer than anticipated i.e. that claim termination rates are lower than anticipated (recovery risk).

2.8.6.5. In cases where a waiting period is applicable before a benefit is payable, these should be assessed for each individual policy. If the waiting period has already expired, then the full value of the disability and morbidity shocks should be taken into account. If the waiting period is still pending, then the shock would need to be decreased proportionally to the non-expired part of the waiting period.

Capital Requirement

2.8.6.6. The capital requirement for disability and morbidity risk is calculated as the sum of the capital requirements as given in 2.8.6.7 and 2.8.6.8:

$$Life_{dis+morb} = Life_{disability} + Life_{morbidity}$$

2.8.6.7. The capital requirement relating to disability risk is calculated as follows:

$$Life_{disability} = \max(0; \Delta BOF|DisabilityShock)$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.
- $DisabilityShock$ is a combination of the following instantaneous changes, applied to each policy, where the payment of benefits (either lump sum or multiple payments) is contingent on disability risk:
  1) An increase of 35% in disability rates, which are used for the calculation of technical provisions, to reflect the disability experience in the following 12 months.
  2) A permanent increase of 25% in disability rates, which are used for the calculation of technical provisions, to reflect the disability experience after the following 12 months.
  3) Where applicable, a permanent decrease of 20% in disability recovery rates.

2.8.6.8. The capital requirement relating to morbidity risk is calculated as follows:

$$Life_{morbidity} = \max(0; \Delta BOF|MorbidityShock)$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $MorbidityShock$ is a combination of the following instantaneous changes, applied to each policy, where the payment of benefits (either lump sum or multiple payments) is contingent on morbidity risk:
  1) An increase of 35% in morbidity rates, which are used for the calculation of technical provisions, to reflect the morbidity experience in the following 12 months.
  2) A permanent increase of 25% in morbidity rates, which are used for the calculation of technical provisions, to reflect the morbidity experience after the following 12 months.
  3) Where applicable, a permanent decrease of 20% in morbidity recovery rates used in the calculation of technical provisions.

2.8.6.9. The increase in disability and morbidity inception rates should be applied to any inception rates used in the calculation of technical provisions, irrespective of the time period to which they refer. The stressed disability and morbidity rates should not exceed a value of 1.

2.8.6.10. The decrease in disability and morbidity recovery rates should be applied to any recovery rates used in the calculation of technical provisions, irrespective of the time period to which they refer. The decrease to recovery rates should not be applied to recovery rates with a value of 1, where this merely reflects the fact that the benefit payments end after a contractually fixed period.

2.8.6.11. Where rates of transition between several health statuses enter into the calculation of technical provisions, insurers should consider all rates of transition from one status to a more severe status as disability and morbidity rates, and consequently apply the increase in rates irrespective of the current status of the policyholder for which a technical provision is calculated.

2.8.6.12. The disability and morbidity shock scenarios should be calculated under the condition that the shock scenario does not change the value of future discretionary benefits in technical provisions.

2.8.6.13. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nLife_{dis+morb}$.

2.8.7. Lapse Risk

Description

2.8.7.1. Lapse risk is caused by the sensitivity of liabilities due to changes in the expected exercise rates of policyholder options.

2.8.7.2. The relevant options are all legal or contractual policyholder rights to fully or partly terminate, surrender, decrease, restrict or suspend insurance cover or permit the insurance policy to lapse.

2.8.7.3. Where a right allows the full or partial establishment, renewal, increase, extension or resumption of insurance or reinsurance cover, the change in the option exercise rate shall be calculated using an equal but opposite relative stress to that applied in option exercise rates that reduce cover.

2.8.7.4. In relation to reinsurance contracts, the relevant policyholder options shall cover:

1) The rights of the policyholders of the reinsurance contracts;
2) The rights of the policyholders of the insurance contracts underlying the reinsurance contracts;
3) Where the reinsurance contracts cover insurance or reinsurance contracts that will be written in the future, the right of the potential policyholders not to conclude those insurance or reinsurance contracts.

2.8.7.5. In the following text, the term 'lapse' is used to denote all these policyholder options. For the purpose of determining the loss in basic own funds of the insurer or reinsurer under the lapse shock scenarios, the (re)insurer should base the calculation on the type of discontinuance which most negatively affects the basic own funds on a per policy basis.

Capital Requirement

2.8.7.6. The capital requirement relating to lapse risk is calculated as follows:

If, $\max\left(0; nLapse_{down}; nLapse_{up}; nLapse_{mass}\right) = nLapse_{down}$

then $Life_{lapse} = Lapse_{down}$ and $nLife_{lapse} = nLapse_{down}$;

Otherwise, if $\max\left(0; nLapse_{down}; nLapse_{up}; nLapse_{mass}\right) = nLapse_{up}$

then $Life_{lapse} = Lapse_{up}$ and $nLife_{lapse} = nLapse_{up}$;

Otherwise, if $\max\left(0; nLapse_{down}; nLapse_{up}; nLapse_{mass}\right) = nLapse_{mass}$

then $Life_{lapse} = Lapse_{mass}$ and $nLife_{lapse} = nLapse_{mass}$;

Otherwise $Life_{lapse} = 0$ and $nLife_{lapse} = 0$.

Where:

- $Life_{lapse}$ is the capital requirement for lapse risk;
- $Lapse_{down}$ is the capital requirement for the risk of a permanent decrease of the rates of lapsation;
- $Lapse_{up}$ is the capital requirement for the risk of a permanent increase of the rates of lapsation;
- $Lapse_{mass}$ is the capital requirement for the risk of a mass lapse event;
- $nLife_{lapse}$ is the capital requirement for lapse risk including the loss absorbing capacity of technical provisions;
- $nLapse_{down}$ is the capital requirement for the risk of a permanent decrease of the rates of lapsation, including the loss absorbing capacity of technical provisions;
- $nLapse_{up}$ is the capital requirement for the risk of a permanent increase of the rates of lapsation, including the loss absorbing capacity of technical provisions;
- $nLapse_{mass}$ is the capital requirement for the risk of a mass lapse event, including the loss absorbing capacity of technical provisions.

2.8.7.7. The capital requirement for the risk of a permanent decrease of the rates of lapsation should be calculated as follows:

$$Lapse_{down} = \Delta BOF | LapseShock_{down}$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $LapseShock_{down}$ is an instantaneous permanent decrease of 50% in the assumed option exercise rates of the relevant options in all future years. However, the resulting absolute decrease in option exercise rates shall not exceed 20 percentage points. The decrease in option exercise rates shall only apply to those relevant options for which the exercise of the option would result in a decrease of technical provisions, excluding the risk margin.

2.8.7.8. The capital requirement for the risk of a permanent increase of the rates of lapsation should be calculated as follows:

$$Lapse_{up} = \Delta BOF | LapseShock_{up}$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $LapseShock_{up}$ is an instantaneous permanent increase of 50% in the assumed option exercise rates of the relevant options in all future years. However, the resulting increased option exercise rates shall not exceed 100%. The increase in option exercise rates shall only apply to those relevant options for which the exercise of the option would result in an increase of technical provisions, excluding the risk margin.

2.8.7.9. Therefore, the shocked option exercise rate should be restricted as follows:

$$R_{down}(R) = \max(50\% \cdot R; R - 20\%)$$
$$R_{up}(R) = \min(150\% \cdot R; 100\%)$$

Where:

- R_{down} is the shocked option exercise rate in $LapseShock_{down}$;
- R_{up} is the shocked option exercise rate in $LapseShock_{up}$;
- R is the option exercise rate before the shock.

2.8.7.10. The capital requirement for the risk of a mass lapse event should be calculated as follows:

$$Lapse_{mass} = \Delta BOF | LapseShock_{mass}$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $LapseShock_{mass}$ is the combination of the following instantaneous shocks:
  1) The discontinuance of 40% of the insurance policies for which discontinuance would result in an increase of technical provisions without the risk margin.
  2) Where reinsurance contracts cover insurance or reinsurance contracts that will be written in the future, the decrease of 40% of the number of those future insurance or reinsurance contracts used in the calculation of technical provisions.

2.8.7.11. The use of the word 'discontinuance' means the surrender, lapse without value, making a contract paid-up, automatic non-forfeiture provisions or exercising other discontinuity options or not exercising continuity options.

2.8.7.12. The lapse shock scenarios should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.8.7.13. Additionally, the result of the scenarios should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nLife_{lapse}$.

2.8.7.14. Notwithstanding the requirement to use the larger of capital requirements as described in 2.8.7.6, where the largest of these capital requirements and the largest of the corresponding capital requirements calculated in accordance with section 0 – "Loss absorbing capacity of technical provisions and deferred taxes" are not based on the same shock scenario, the capital requirement for lapse risk shall be equal to the capital requirement referred to in paragraph 2.8.7.6 for which the underlying shock scenario results in the largest corresponding capital requirement calculated in accordance with section 0.

2.8.8. Expense Risk

Description

2.8.8.1. Expense risk is caused by variation in the expenses incurred in servicing insurance and reinsurance contracts.

Capital Requirement

2.8.8.2. The capital requirement relating to expense risk is calculated as follows:

$$Life_{expense} = \Delta BOF|ExpenseShock$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $ExpenseShock$ is a combination of the following instantaneous permanent adjustments:
  1) The level of future expenses taken into account in the technical provisions is increased by a multiplicative factor of 10%;
  2) The expense inflation rate used in the calculation of technical provisions is increased by an absolute value of 1%.

2.8.8.3. An expense payment that is fixed and certain at the valuation date (e.g. fixed future renewal commission) should not be stressed under this scenario.

2.8.8.4. The analysis of the expense scenario should account for any realistic management actions that may be taken in relation to any policies that have adjustable expense loadings, as long as the actions comply with the requirements of section 1.2.3.

2.8.8.5. In respect of reinsurance obligations, insurers and reinsurers should apply the stress scenario to their own expenses and, where relevant, to the expenses of the cedant's.

2.8.8.6. The expense scenario should be calculated under the condition that the shock scenario does not change the value of future discretionary benefits in technical provisions.

2.8.8.7. Additionally, the result of the shock scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nLife_{expense}$.

2.8.9. Revision Risk

Description

2.8.9.1. Revision risk is caused by the sensitivity of insurance and reinsurance liabilities to fluctuations in the level, trend, or volatility of revision rates applied to annuities, due to changes in the legal environment or the state of health of the person insured.

2.8.9.2. The revision shock scenario should be applied only to annuities where the benefits payable under the underlying insurance policies could increase as a result of changes in the legal environment or in the state of health of the person insured.

2.8.9.3. This includes annuities arising from non-life claims (excluding annuities arising from health obligations which are covered in the health SLT underwriting risk capital requirement) where the amount of the annuity may be revised during the year for the reasons mentioned above.

Capital Requirement

2.8.9.4. The capital requirement relating to revision risk is calculated as follows:

$$Life_{revision} = \Delta BOF|RevisionShock$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin;
- $RevisionShock$ is an instantaneous permanent increase of 3% in the annual amount payable for annuities exposed to revision risk. The impact should be assessed considering the remaining run-off period of the annuities.

2.8.10. Life Catastrophe Risk

Description

2.8.10.1. Catastrophe risk is caused by extreme or irregular events whose effects are not sufficiently captured in the other life underwriting risk shock scenarios. Examples could be a pandemic event or a nuclear explosion.

2.8.10.2. Catastrophe risk is mainly associated with products (such as term assurance or endowment policies) in which a company guarantees to make a single or a recurring, periodic series of payments when a policyholder dies.

2.8.10.3. The life catastrophe risk shock scenario should be calculated allowing for (re)insurance obligations which are contingent on mortality or longevity, i.e. where an increase in mortality rates can lead to either an increase or a decrease in technical provisions, and should take into account the following:

1) Multiple insurance policies in respect of the same insured person may be treated as if they were one policy;
2) Where model points are used for the purposes of calculating the technical provisions, and the grouping of data captures appropriately the mortality and longevity risk of the portfolio, each model point can be considered to represent a single policy for the purposes of applying the life catastrophe shock scenario.

Capital Requirement

2.8.10.4. The capital requirement relating to life catastrophe risk is calculated as follows:

$$Life_{CAT} = \max(0; \Delta BOF|LifeCATShock)$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.
- $LifeCATShock$ is an instantaneous absolute addition of 0.15% to the mortality rates which are used in the calculation of technical provisions to reflect the mortality experience in the following 12 months.

2.8.10.5. This life catastrophe shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.8.10.6. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nLife_{cat}$.

2.9. Health Underwriting Risk

2.9.1. Structure of the health underwriting risk capital requirement

2.9.1.1. This section covers the risk arising from the underwriting of health insurance and reinsurance, and is associated with both the perils covered and the processes followed in the conduct of business.

2.9.1.2. The definition of health insurance and reinsurance obligations is set out in section 1.2.2 on segmentation. Health (re)insurance obligations can be split according to their technical nature into:

- Health insurance obligations pursued on a similar technical basis to that of life insurance (SLT Health); and
- Health insurance obligations not pursued on a similar technical basis to that of life insurance (Non-SLT Health).

2.9.1.3. The health underwriting risk section consists of the following shock scenario categories:

- The SLT Health underwriting risk shock scenarios;
- the Non-SLT Health underwriting risk shock scenarios;
- the Health catastrophe risk shock scenarios.

2.9.2. Description

2.9.2.1. The health underwriting risk capital requirement is calculated using the input from three sets of stresses that aim to establish the exposure of the participating insurer to underwriting risk (comprising premium & reserve and lapse risks) and catastrophe risk.

2.9.2.2. The shock scenarios provide the following information:

- $Health_{SLT}$ is the capital requirement for underwriting risk on SLT business;

- $Health_{NonSLT}$ is the capital requirement for underwriting risk on non-SLT business;
- $Health_{CAT}$ is the capital requirement for catastrophe risk;

2.9.3. Capital Requirement

2.9.3.1. The capital requirement relating to health underwriting risk is calculated by combining the capital requirements listed in 2.8.2.2 using a correlation matrix as follows:

$$SCR_{Health} = \sqrt{\sum_{r,c} HCorr_{r,c} \cdot Health_r \cdot Health_c}$$

Where:

- The sum includes all possible combinations of the non-life underwriting risk shock scenarios (*r,c*);
- $HCorr_{r,c}$ are the entries of the correlation matrix $HCorr$;
- $Health_r$ and $Health_c$ are the capital requirements for the individual health shock scenarios according to the rows and columns of the correlation matrix $HCorr$;
- $HCorr$ is defined as:

$HCorr$	SLT	NonSLT	Catastrophe
SLT	1	0.5	0.25
NonSLT	0.5	1	0.25
Catastrophe	0.25	0.25	1

2.9.3.2. The net capital requirement relating to life underwriting risk is determined as follows:

$$nSCR_{Health} = \sqrt{\sum_{r,c} HCorr_{r,c} \cdot nHealth_r \cdot nHealth_c}$$

2.9.4. SLT Health (Similar to Life Techniques) underwriting risk shock scenarios

Description

2.9.4.1. SLT Health underwriting risk arises from the underwriting of health (re)insurance obligations, pursued on a similar basis to life insurance, and is associated with both the perils covered and processes used in the conduct of the business.

2.9.4.2. The SLT Health underwriting risk capital requirement is calculated using the input from six shock scenarios that aim to establish the exposure of the participating insurer to mortality, longevity, disability and morbidity, expense, revision and lapse risk.

2.9.4.3. The shock scenarios provide the following information:

- $Health^{SLT}_{mortality}$ is the capital requirement for mortality risk;

- $Health_{longevity}^{SLT}$ is the capital requirement for longevity risk;
- $Health_{dis+morb}^{SLT}$ is the capital requirement for disability and morbidity risk;
- $Health_{expense}^{SLT}$ is the capital requirement for expense risk;
- $Health_{revision}^{SLT}$ is the capital requirement for revision risk;
- $Health_{lapse}^{SLT}$ is the capital requirement for lapse risk;
- $nHealth_{mortality}^{SLT}$ is the capital requirement for mortality risk including the loss absorbing capacity of technical provisions;
- $nHealth_{longevity}^{SLT}$ is the capital requirement for longevity risk including the loss absorbing capacity of technical provisions;
- $nHealth_{dis+morb}^{SLT}$ is the capital requirement for disability and morbidity risk including the loss absorbing capacity of technical provisions;
- $nHealth_{expense}^{SLT}$ is the capital requirement for expense risk including the loss absorbing capacity of technical provisions;
- $nHealth_{revision}^{SLT}$ is the capital requirement for revision risk including the loss absorbing capacity of technical provisions;
- $nHealth_{lapse}^{SLT}$ is the capital requirement for lapse risk including the loss absorbing capacity of technical provisions;

2.9.5. Capital Requirement

2.9.5.1. The capital requirement relating to SLT Health underwriting risk is calculated by combining the capital requirements listed in 2.9.4.3 using a correlation matrix as follows:

$$Health_{SLT} = \sqrt{\sum_{r,c} HealthCorr_{r,c}^{SLT} \cdot Health_{r}^{SLT} \cdot Health_{c}^{SLT}}$$

Where:

- $HealthCorr_{r,c}^{SLT}$ are the entries of the correlation matrix $HealthCorr^{SLT}$;
- $Health_{r}^{SLT}$ and $Health_{c}^{SLT}$ are the capital requirements for the individual health SLT shock scenarios according to the rows and columns of the correlation matrix $HealthCorr^{SLT}$;
- $HealthCorr^{SLT}$ is defined as:

$HealthCorr$	Mortality	Longevity	Disability	Lapse	Expenses	Revision
Mortality	1	-0.25	0.25	0	0.25	0
Longevity	-0.25	1	0	0.25	0.25	0.25
Disability	0.25	0	1	0	0.5	0
Lapse	0	0.25	0	1	0.5	0
Expenses	0.25	0.25	0.5	0.5	1	0.5
Revision	0	0.25	0	0	0.5	1

2.9.5.2. The net capital requirement relating to life underwriting risk is determined as follows:

$$nHealth_{SLT} = \sqrt{\sum_{r,c} HealthCorr_{r,c}^{SLT} \cdot nHealth_{r}^{SLT} \cdot nHealth_{c}^{SLT}}$$

2.9.6. Mortality Risk

Description

2.9.6.1. Mortality risk is caused by the sensitivity of insurance and reinsurance liabilities to fluctuations in the level, trend or volatility of mortality rates, where an increase in the mortality rates leads to an increase in the value of technical provisions, taking into account the following:

1) Multiple insurance policies in respect of the same insured person may be treated as if they were one policy.
2) Where model points are used for the purposes of calculating the technical provisions, and the grouping of data captures appropriately the mortality risk of the portfolio, each model point can be considered to represent a single policy for the purposes of applying the mortality shock scenario.

2.9.6.2. With regard to reinsurance obligations, the identification of the policies for which technical provisions increase under the mortality shock scenario shall apply to the underlying insurance policies only and shall be carried out in accordance with paragraph 2.8.4.5.

2.9.6.3. The SLT Health mortality shock scenario aims at capturing the increase in general mortality that negatively affects the obligations of the insurer. For the health products concerned by this risk, mortality risk relates to the general mortality probabilities used in the calculation of technical provisions. Even if the health product does not insure death risk, there may be a significant morality risk because the valuation includes profit at inception: if the policyholder dies early he/she will not pay future premiums and the profit of the insurer will be lower than allowed for in the technical provisions.

Capital Requirement

2.9.6.4. The capital requirement relating to mortality risk is calculated as follows:

$$Health_{mortality} = \Delta BOF | MortalityShock$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $MortalityShock$ is an instantaneous permanent increase of 15% in all mortality rates used for the calculation of technical provisions, irrespective of the time period to which they refer. The stressed mortality rates should not exceed a value of 1.

2.9.6.5. The mortality shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.9.6.6. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock scenario being applied. The resulting capital requirement is $nHealth_{mortality}$.

2.9.7. SLT Health Longevity Risk

Description

2.9.7.1. Longevity risk is caused by the sensitivity of insurance and reinsurance liabilities, to fluctuations in the level, trend or volatility of mortality rates, where a decrease in mortality rates leads to an increase in the value of technical provisions, taking into account the following:

1) Multiple insurance policies in respect of the same insured person may be treated as if they were one policy.
2) Where model points are used for the purposes of calculating the technical provisions, and the grouping of data captures appropriately the longevity risk of the portfolio, each model point can be considered to represent a single policy for the purposes of applying the longevity shock scenario.

2.9.7.2. With regard to reinsurance obligations, the identification of the policies for which technical provisions increase under the longevity shock scenario shall apply to the underlying insurance policies only and shall be carried out in accordance with paragraph 2.9.7.1.

Capital Requirement

2.9.7.3. The capital requirement relating to longevity risk is calculated as follows:

$$Health_{longevity} = \Delta BOF | LongevityShock$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $LongevityShock$ is an instantaneous permanent decrease of 20% in all mortality rates used for the calculation of technical provisions, irrespective of the time period to which they refer.

2.9.7.4. The longevity shock scenario should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.9.7.5. Additionally, the result of the shock scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nHealth_{longevity}$.

2.9.8. SLT Health disability / morbidity risk shock scenarios

2.9.8.1. SLT Health disability/morbidity risk shock scenarios cover the risk of loss, or of adverse change in the value of (re)insurance liabilities, resulting from changes in the level, trend or volatility of the frequency of the initial severity of claims, due to changes in:

- Disability, sickness and morbidity rates;
- Medical inflation.

2.9.8.2. The SLT Health disability/morbidity risk shock scenarios are specified separately for medical protection insurance and income protection insurance, as follows:

- **Medical expense insurance obligations** are obligations which cover the provision of preventive or curative medical treatment or care including medical treatment or care due to illness, accident, disability and infirmity, or financial compensation for such treatment or care.
- **Income protection insurance obligations** are obligations which cover financial compensation in consequence of illness, accident, disability or infirmity other than obligations considered as medical expense insurance obligations.

2.9.8.3. The shock scenarios provide the following information:

- $Health_{medical}^{SLT}$ is the capital requirement for disability and morbidity risk for medical expense insurance;
- $Health_{income}^{SLT}$ is the capital requirement for disability and morbidity risk for income protection insurance;
- $nHealth_{medical}^{SLT}$ is the capital requirement for disability and morbidity risk for medical expense insurance including the loss absorbing capacity of technical provisions;
- $nHealth_{income}^{SLT}$ is the capital requirement for disability and morbidity risk for income protection insurance including the loss absorbing capacity of technical provisions.

2.9.8.4. The capital requirement for SLT Health disability/morbidity risk is determined as follows:

$$Health_{dis+morb}^{SLT} = Health_{medical}^{SLT} + Health_{income}^{SLT}$$
$$nHealth_{dis+morb}^{SLT} = nHealth_{medical}^{SLT} + nHealth_{income}^{SLT}$$

SLT Health Disability & Morbidity Risk for medical expense (re)insurance

Description

2.9.8.5. For medical expense reinsurance, the determination of the disability/morbidity capital requirement cannot be based on disability or morbidity probabilities. A large part of the risk in medical expense (re)insurance is independent from the actual health status of the insured person. For example, it may be very expensive to find out whether the insured person is ill or to prevent the insured person from becoming ill – these expenses are usually covered by the health policy. If an insured person is ill, the resulting expenses significantly depend on the individual case. It can also happen that an insured person is ill but does not generate significant medical expenses. Moreover, technically the business is not based on disability/morbidity rates but on expected medical expenses.

Capital Requirement

2.9.8.6. The capital requirement for disability and morbidity risk is computed by analysing the scenarios *shock up* and *shock down* defined as follows:

Scenario	Permanent change of the inflation rate of medical payments	Permanent change in the amount of medical expenses
shock up	+1%	+5%
shock down	-1%	-5%

2.9.8.7. The scenario shock down only needs to be analysed for policies that include a premium adjustment mechanism which foresees an increase in premiums if claims are higher than expected and a decrease in premiums if claims are lower than expected. Otherwise insurers should assume that the result of the scenario shock down is zero.

2.9.8.8. In the first instance, capital requirements for the increase and decrease of claims are calculated as follows:

$$Health^{SLT}_{medical,up} = \Delta BOF|shockup$$
$$Health^{SLT}_{medical,down} = \Delta BOF|shockdown$$
$$nHealth^{SLT}_{medical,up} = \Delta BOF|shockup$$
$$nHealth^{SLT}_{medical,down} = \Delta BOF|shockdown$$

2.9.8.9. ΔBOF is the loss in basic own funds of the insurer under the relevant scenario. The scenario is assumed to occur immediately after the valuation date. In the first two scenarios, the calculation is made under the condition that the assumptions on future bonus rates remain unchanged before and after the shock. The last two calculations are made under the condition that the assumptions on future bonus rates may be changed in response to the shock. Moreover the revaluation should allow for any relevant adverse changes in policyholders' behaviour (option take-up) in this scenario.

2.9.8.10. The relevant scenario for the capital requirement (*up* or *down*) is the more adverse scenario taking into account the loss-absorbing capacity of technical provisions:

$$nHealth^{SLT}_{medical} = \max(nHealth^{SLT}_{medical,up}; nHealth^{SLT}_{medical,down})$$

If $nHealth^{SLT}_{medical,up} > nHealth^{SLT}_{medical,down}$ then

$$Health^{SLT}_{medical} = Health^{SLT}_{medical,up}$$

otherwise

If $nHealth^{SLT}_{medical,down} > nHealth^{SLT}_{medical,up}$ then

$$Health^{SLT}_{medical} = Health^{SLT}_{medical,down}$$

otherwise

If $nHealth^{SLT}_{medical,down} = nHealth^{SLT}_{medical,up}$ then

$$Health^{SLT}_{medical} = \max(Health^{SLT}_{medical,up}; Health^{SLT}_{medical,down})$$

SLT Health Disability & Morbidity Risk for income protection (re)insurance

2.9.8.11. For income protection (re)insurance, the determination of the capital requirement for disability/morbidity risk is based on disability or morbidity probabilities.

2.9.8.12. The capital requirement relating to disability risk is calculated as follows:

$$Health^{SLT}_{income} = \max(0; \Delta BOF | MorbidityDisabilityShock)$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin.
- $MorbidityDisabilityShock$ is a combination of the following instantaneous changes, applied to each policy:
  1) A decrease of 20% in morbidity/disability recovery rates, which are used for the calculation of technical provisions, where those recovery rates are lower than 50%.
  2) An increase of 20% in morbidity/disability rates, which are used for the calculation of technical provisions, where these rates are equal to or lower than 50%.

2.9.8.13. The increase in disability and morbidity inception rates should be applied to any inception rates used in the calculation of technical provisions, irrespective of the time period to which they refer.

2.9.8.14. The decrease in disability and morbidity recovery rates should be applied to any recovery rates used in the calculation of technical provisions, irrespective of the time period to which they refer.

2.9.8.15. Where rates of transition between several health statuses enter into the calculation of technical provisions, insurers should consider all rates of transition from one status to a more severe status as disability and morbidity rates, and consequently apply the increase in rates irrespective of the current status of the policyholder for which a technical provision is calculated.

2.9.8.16. The disability and morbidity shock scenarios should be calculated under the condition that the shock scenario does not change the value of future discretionary benefits in technical provisions.

2.9.8.17. Additionally, the result of the scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nHealth_{income}^{SLT}$.

2.9.9. Expense Risk

Description

2.9.9.1. Expense risk is caused by variation in the level, trend or volatility of expenses incurred in servicing insurance and reinsurance contracts.

Capital Requirement

2.9.9.2. The capital requirement relating to expense risk is calculated as follows:

$$Health_{expense} = \Delta BOF | ExpenseShock$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $ExpenseShock$ is a combination of the following instantaneous permanent adjustments:

1) The level of future expenses taken into account in the technical provisions is increased by a multiplicative factor of 10%;
2) The expense inflation rate used in the calculation of technical provisions is increased by an absolute value of 1%.

2.9.9.3. An expense payment that is fixed and certain at the valuation date (e.g. fixed future renewal commission) should not be stressed under this scenario.

2.9.9.4. The analysis of the expense scenario should account for any realistic management actions that may be taken in relation to any policies that have adjustable expense loadings, as long as the actions comply with the requirements of section 1.2.3.

2.9.9.5. In respect of reinsurance obligations, insurers and reinsurers should apply the stress scenario to their own expenses and, where relevant, to the expenses of the cedant's.

2.9.9.6. The expense scenario should be calculated under the condition that the shock scenario does not change the value of future discretionary benefits in technical provisions.

2.9.9.7. Additionally, the result of the shock scenario should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nHealth_{expense}$.

2.9.10. Revision Risk

Description

2.9.10.1. Revision risk is caused by the sensitivity of insurance and reinsurance liabilities to fluctuations in the level, trend, or volatility of revision rates applied to annuities, due to changes in inflation, the legal environment or the state of health of the person insured.

2.9.10.2. The revision shock scenario should be applied only to annuities where the benefits payable under the underlying insurance policies could increase as a result of changes in the legal environment or in the state of health of the person insured.

2.9.10.3. This includes particularly annuities arising from Non-SLT health obligations, where the amount of the annuity may be revised during the year for the reasons mentioned above.

Capital Requirement

2.9.10.4. The capital requirement relating to revision risk is calculated as follows:

$$Health_{revision} = \Delta BOF | RevisionShock$$

Where:

- ΔBOF is the change in the value of basic own funds, this does not include changes in the risk margin;
- $RevisionShock$ is an instantaneous permanent increase of 4% in the annual amount payable for annuities exposed to revision risk. The impact should be assessed considering the remaining run-off period of the annuities.

2.9.10.5. $nHealth_{revision}$ should be set equal to $Health_{revision}$.

2.9.11. Lapse Risk

Description

2.9.11.1. Lapse risk is caused by the sensitivity of liabilities due to changes in the expected exercise rates of policyholder options.

Capital Requirement

2.9.11.2. The capital requirement relating to lapse risk is calculated as follows:

If, $\max\left(0; nHLapse_{down}; nHLapse_{up}; nHLapse_{mass}\right) = nHLapse_{down}$

then $Health_{lapse} = HLapse_{down}$ and $nHealth_{lapse} = nHLapse_{down}$;

Otherwise, if $\max\left(0; nHLapse_{down}; nHLapse_{up}; nHLapse_{mass}\right) = nHLapse_{up}$

then $Health_{lapse} = HLapse_{up}$ and $nHealth_{lapse} = nHLapse_{up}$;

Otherwise, if $\max(0; nHLapse_{down}; nHLapse_{up}; nHLapse_{mass}) = nHLapse_{mass}$

then $Health_{lapse} = Health_{mass}$ and $nHealth_{lapse} = nHLapse_{mass}$;

Otherwise $Health_{lapse} = 0$ and $nHealth_{lapse} = 0$.

Where:

- $Health_{lapse}$ is the capital requirement for lapse risk;
- $HLapse_{down}$ is the capital requirement for the risk of a permanent decrease of the rates of lapsation;
- $HLapse_{up}$ is the capital requirement for the risk of a permanent increase of the rates of lapsation;
- $HLapse_{mass}$ is the capital requirement for the risk of a mass lapse event;
- $nHealth_{lapse}$ is the capital requirement for lapse risk including the loss absorbing capacity of technical provisions;
- $nHLapse_{down}$ is the capital requirement for the risk of a permanent decrease of the rates of lapsation, including the loss absorbing capacity of technical provisions;
- $nHLapse_{up}$ is the capital requirement for the risk of a permanent increase of the rates of lapsation, including the loss absorbing capacity of technical provisions;
- $nHLapse_{mass}$ is the capital requirement for the risk of a mass lapse event, including the loss absorbing capacity of technical provisions.

2.9.11.3. The capital requirement for the risk of a permanent decrease of the rates of lapsation should be calculated as follows:

$$HLapse_{down} = \Delta BOF | LapseShock_{down}$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $HLapseShock_{down}$ is an instantaneous permanent decrease of 50% in the assumed option exercise rates of the relevant options in all future years. However, the resulting absolute decrease in option exercise rates shall not exceed 20 percentage points. The decrease in option exercise rates shall only apply to those relevant options for which the exercise of the option would result in a decrease of technical provisions, excluding the risk margin.

2.9.11.4. The capital requirement for the risk of a permanent increase of the rates of lapsation should be calculated as follows:

$$HLapse_{up} = \Delta BOF | LapseShock_{up}$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.

- $HLapseShock_{up}$ is an instantaneous permanent increase of 50% in the assumed option exercise rates of the relevant options in all future years. However, the resulting increased option exercise rates shall not exceed 100%. The increase in option exercise rates shall only apply to those relevant options for which the exercise of the option would result in an increase of technical provisions, excluding the risk margin.

2.9.11.5. Therefore, the shocked option exercise rate should be restricted as follows:

$$R_{down}(R) = \max(50\% \cdot R; R - 20\%)$$
$$R_{up}(R) = \min(150\% \cdot R; 100\%)$$

Where:

- R_{down} is the shocked option exercise rate in $HLapseShock_{down}$;
- R_{up} is the shocked option exercise rate in $HLapseShock_{up}$;
- R is the option exercise rate before the shock.

2.9.11.6. The capital requirement for the risk of a mass lapse event should be calculated as follows:

$$HLapse_{mass} = \Delta BOF | LapseShock_{mass}$$

Where:

- ΔBOF is the change in the value of basic own funds, excluding changes in the risk margin.
- $LapseShock_{mass}$ is the combination of the following instantaneous shocks:
  1) The discontinuance of 40% of the insurance policies for which discontinuance would result in an increase of technical provisions without the risk margin.
  2) Where reinsurance contracts cover insurance or reinsurance contracts that will be written in the future, the decrease of 40% of the number of those future insurance or reinsurance contracts used in the calculation of technical provisions.

2.9.11.7. The use of the word 'discontinuance' means the surrender, lapse without value, making a contract paid-up, automatic non-forfeiture provisions or exercising other discontinuity options or not exercising continuity options.

2.9.11.8. The lapse shock scenarios should be calculated under the condition that the scenario does not change the value of future discretionary benefits in technical provisions.

2.9.11.9. Additionally, the result of the scenarios should be determined under the condition that the value of future discretionary benefits can change and that the insurer is able to vary its assumptions in future bonus rates in response to the shock being applied. The resulting capital requirement is $nHealth_{lapse}$.

2.9.11.10. Notwithstanding the requirement to use the larger of capital requirements as described in 2.9.11.2, where the largest of these capital requirements and the largest of the corresponding capital requirements calculated in accordance with section 0 – "Loss absorbing capacity of technical provisions and deferred taxes" are not based on the same shock scenario, the capital requirement for lapse risk shall be equal to the capital requirement referred to in paragraph 2.9.11.2 for which the underlying shock scenario results in the largest corresponding capital requirement calculated in accordance with section 0.

2.9.12. Non-SLT Health (Not Similar to Life Techniques) underwriting risk capital requirement

2.9.12.1. The Non-SLT Health underwriting risk capital requirement is defined as

$$Health_{NonSLT} = \sqrt{(Health_{pr}^{NonSLT})^2 + (Health_{lapse}^{NonSLT})^2}$$

where

$Health_{pr}^{NonSLT}$ = capital requirement for Non-SLT Health premium and reserve risk

$Health_{lapse}^{NonSLT}$ = capital requirement for Non-SLT Health lapse risk

Non SLT Health premium and reserve risk

Description

2.9.12.2. This shock scenario combines a treatment for the two main sources of underwriting risk: premium risk and reserve risk.

Capital requirement

2.9.12.3. The capital requirement for the combined premium risk and reserve risk is determined as follows:

$$Health_{pr}^{NonSLT} = \theta \cdot \sigma \cdot V$$

Where:

- θ is equal to 3;
- V is the volume measure for Non-SLT Health (re)insurance obligations;
- σ is the combined standard deviation for Non-SLT Health premium and reserve risk.

2.9.12.4. The volume measure V and the combined standard deviation σ for the overall non-life insurance portfolio are determined in two steps as follows:

- For each individual segment, the standard deviations and volume measures for both premium risk and reserve risk are determined;
- The standard deviations and volume measures for the premium risk and the reserve risk in the individual segments are aggregated to derive an overall volume measure V and a combined standard deviation σ.

The calculations needed to perform these two steps are set out below.

Step 1: Volume measures and standard deviations per segment

2.9.12.5. The premium and reserve risk shock scenario is based on the following segmentation into sub-lines of business or segments.

	Segment
3A	Medical expense insurance and proportional reinsurance - Medical expense insurance obligations where the underlying business is not pursued on a similar technical basis to that of life insurance, other than obligations included in the sub-line of business 3C.
3B	Income protection insurance and proportional reinsurance - Income protection insurance obligations where the underlying business is not pursued on a similar technical basis to that of life insurance, other than obligations included in the sub-line of business 3C.
3C	Workers' compensation insurance and proportional reinsurance - Health insurance obligations which relate to accidents at work, industrial injury and occupational diseases and where the underlying business is not pursued on a similar technical basis to that of life insurance.
3D	Non-proportional health reinsurance - Non-proportional reinsurance obligations relating to insurance obligations included in sub-lines of business 3A, 3B, and 3C.

2.9.12.6. For each segment, the volume measures and standard deviations for premium and reserve risk are denoted as follows:

- $V_{(prem,s)}$ is the volume measure for premium risk;
- $V_{(res,s)}$ is the volume measure for reserve risk ;
- $\sigma_{(prem,s)}$ is the standard deviation for premium risk;
- $\sigma_{(res,s)}$ is the standard deviation for reserve risk.

2.9.12.7. The volume measure for premium risk in the individual segment is determined as follows:

$$V_{(prem,s)} = \max\left(P_s; P_{(last,s)}\right) + FP_{(existing,s)} + FP_{(future,s)}$$

Where:

- P_s is the estimate of the premiums to be earned by the insurer or reinsurer for each segment, *s*, during the following 12 months;
- $P_{(last,s)}$ is the premiums earned by the insurer or reinsurer for each segment, *s*, during the last 12 months;

- $FP_{(existing,s)}$ is the expected present value of premiums to be earned by the insurer or reinsurer for each segment, *s*, after the following 12 months for existing contracts;
- $FP_{(future,s)}$ is the expected present value of premiums to be earned by the insurer or reinsurer for each segment, *s*, for contracts where the initial recognition date falls in the following 12 months but excluding the premiums to be earned during the 12 months after the initial recognition date.

2.9.12.8. If the insurer or reinsurer has met the following conditions;

1) The administrative, management or supervisory body of the insurer or reinsurer has decided that its earned premiums for each segment during the following 12 months will not exceed P_s;
2) The insurer or reinsurer has established effective control mechanisms to ensure that the limits on earned premiums referred to in 1) above will be met;
3) The insurer or reinsurer has informed its supervisory authority about the decision referred to in 1) above and the reasons for it,

the insurer or reinsurer may calculate the volume measure for premium risk for each segment in accordance with the following formula:

$$V_{(prem,s)} = P_s + FP_{(existing,s)} + FP_{(future,s)}$$

2.9.12.9. Premiums shall be net, after deduction of premiums for reinsurance contracts. However, the following premiums for reinsurance contracts shall not be deducted:

1) Premiums that cannot be taken into account in the calculation of amounts recoverable from reinsurance contracts and special purpose vehicles;
2) Premiums for reinsurance contracts that do not meet the requirements as risk mitigation techniques.

2.9.12.10. The standard deviation for premium risk gross of reinsurance for each segment are:

Segment, *s*	Standard deviation for premium risk (gross of reinsurance)
3A: Medical expense insurance and proportional reinsurance	5%
3B: Income protection insurance and proportional reinsurance	8.5%
3C: Workers' compensation insurance and proportional reinsurance	8%
3D. Non-proportional health reinsurance	17%

2.9.12.11. The standard deviation of a segment shall be equal to the product of the gross standard deviation for each segment set out in the table above and the adjustment factor for non-proportional reinsurance, $\mathrm{NP}_{\mathrm{lob}}$, which allows undertakings to take into account the risk-mitigating effect of particular per risk excess of loss reinsurance. Nevertheless, for all segments set out in the table above the adjustment factor for non-proportional reinsurance shall be equal to 1.

2.9.12.12. If an insurer believes that the nature of its reinsurance is such that the adjustment factor for non-proportional reinsurance $\mathrm{NP}_{\mathrm{lob}}$ for a line of business should be different from that specified in the previous paragraph it should provide details, including justification, with or before the submission of its QIS4 results.

2.9.12.13. The volume measure for reserve risk for each individual segment, s, is determined as follows:

$$V_{(res,s)} = PCO_s$$

Where:

- PCO_s is the best estimate for claims outstanding for each segment, s. This amount should be less the amount recoverable from reinsurance contracts and special purpose vehicles, provided that the reinsurance contracts or special purpose vehicles meet the requirements as risk mitigation techniques in 2.14 and the volume measure shall not be a negative amount.

2.9.12.14. The standard deviation for reserve risk net of reinsurance for each segment are:

Segment, *s*	Standard deviation for reserve risk (net of reinsurance)
3A: Medical expense insurance and proportional reinsurance	5%
3B: Income protection insurance and proportional reinsurance	14%
3C: Workers' compensation insurance and proportional reinsurance	11%
28. Non-proportional health reinsurance	20%

2.9.12.15. No further adjustments are needed to these results. If an insurer believes that the nature of its reinsurance is such that the standard deviation for reserve risk net of reinsurance for a line of business should be different from that specified in this paragraph it should provide details, including justification, with or before the submission of its QIS4 results.

2.9.12.16. The standard deviation for premium and reserve risk in the individual segment is defined by aggregating the standard deviations for both sub-risks using the following formula

$$\sigma_s = \frac{\sqrt{\left(\sigma_{(prem,s)} \cdot V_{(prem,s)}\right)^2 + \left(\sigma_{(prem,s)} \cdot \sigma_{(res,s)} \cdot V_{(prem,s)} \cdot V_{(res,s)}\right) + \left(\sigma_{(res,s)} \cdot V_{(res,s)}\right)^2}}{V_{(prem,s)} + V_{(res,s)}}$$

Step 2: Overall volume measures and standard deviations

2.9.12.17. The overall standard deviation σ_{nl} is determined as follows:

$$\sigma_{nl} = \frac{1}{V_{nl}} \sqrt{\sum_{r,c} CorrS_{r,c} \cdot \sigma_r \cdot V_r \cdot \sigma_c \cdot V_c}$$

Where:

- V_{nl} is the sum over all segments, *s*, of V_s;
- The sum includes all possible combinations of risk group *(r,c)* in the form (segment, *s*);
- $CorrS_{r,c}$ are the entries of the correlation matrix $CorrS$;
- V_r and V_c are the volume measures for premium and reserve risk of segments r and c respectively;
- σ_r and σ_c are the standard deviations for non-life premium and reserve risk of segments s and t respectively;
- $CorrS$ is defined as follows:

CorrS	3A	3B	3C	3D
3A. Medical expense	1	0.5	0.5	0.5
3B. Income protection	0.5	1	0.5	0.5
3C. Workers' comp	0.5	0.5	1	0.5
3D. NP health reins	0. 5	0. 5	0.5	1

2.9.12.18. The overall volume measure for each segment, V_s is obtained as follows:

$$V_s = \left(V_{(prem,s)} + V_{(res,s)}\right)$$

Lapse Risk

Capital requirement

2.9.12.19. The capital requirement for lapse risk should be equal to the loss in basic own funds of undertakings that would result from the combination of two shocks:

$$Health_{lapse}^{NonSLT} = \Delta BOF|(lapseshock_1, lapseshock_2)$$

Where:

- $Health_{lapse}^{NonSLT}$ is the capital requirement for lapse risk ;
- ΔBOF is the change in the value of basic own funds (not including changes in the risk margin of technical provisions);
- $lapseshock_1$ is a discontinuance of 40% of the insurance policies for which discontinuance would result in an increase of technical provisions without the risk margin.

- $lapseshock_2$ is a decrease of 40% of the number of future insurance or reinsurance contracts used in the calculation of technical provisions associated to reinsurance contracts cover insurance or reinsurance contracts to be written in the future.

2.9.12.20. $lapseshock_1$ and $\mathrm{lapseshock}_2$ shall apply uniformly to all insurance and reinsurance contracts concerned. In relation to reinsurance contracts $\mathrm{lapseshock}_1$ shall apply to the underlying insurance contracts.

2.9.12.21. For the purpose of determining the loss in basic own funds of the insurer or reinsurer under $\mathrm{lapseshock}_1$, the insurer or reinsurer shall base the stress on the type of discontinuance which most negatively affects the basic own funds of the insurer or reinsurer on a per policy basis.

2.9.13. Health catastrophe risk capital requirement

2.9.13.1. Health catastrophe risk is defined as the risk of loss, or of adverse change in the value of insurance liabilities, resulting from significant uncertainty of pricing and provisioning assumptions related to major accidents and epidemics, as well as the unusual accumulation of risks under such extreme circumstances.

2.9.13.2. Where risk mitigation techniques meet the requirements set out in subsections 2.123 and 2.14, their risk-mitigating effect should be taken into account in the analysis of the scenario.

2.9.13.3. Catastrophe risks stem from extreme or irregular events that are not sufficiently captured by the capital requirements for premium and reserve risk. The catastrophe risk capital requirement has to be calibrated at a 99.5% VaR.

2.9.13.4. The catastrophe risk capital requirement, $\mathrm{NL}_{\mathrm{healthCAT}}$, shall consist of the following shock scenarios:

- The mass accident shock scenario;
- The concentration shock scenario;
- The pandemic shock scenario.

2.9.13.5. Catastrophe risks stem from extreme or irregular events that are not sufficiently captured by the capital requirements for premium and reserve risk. The catastrophe risk capital requirement has to be calibrated at a 99.5% VaR.

2.9.13.6. The shock scenarios provide the following information:

- $Health_{massaccident}$ is the capital requirement for mass accident risk;
- $Health_{concentration}$ is the capital requirement for concentration risk;
- $Health_{pandemix}$ is the capital requirement for pandemic risk.

2.9.13.7. Insurers shall apply:

- The mass accident risk scenario to health insurance and reinsurance obligations other than workers' compensation insurance and reinsurance obligations;

- The accident concentration risk scenario to workers' compensation insurance and reinsurance obligations and to group income protection insurance and reinsurance obligations;
- The pandemic risk scenario to health insurance and reinsurance obligations other than workers' compensation insurance and reinsurance obligations.

Capital Requirement

2.9.13.8. The capital requirement relating to health catastrophe risk is calculated by combining the capital requirements listed in 2.9.13.6, assuming they are independent, as follows:

$$NL_{HealthCAT} = \sqrt{Health_{massaccident}{}^2 + Health_{concentration}{}^2 + Health_{pandemic}{}^2}$$

Health Mass Accident Risk

Description

2.9.13.9. The Health Mass Accident risk aims to capture the risk of having lots of people in one place at one time and a catastrophic event affecting such location and people.

Capital Requirement

2.9.13.10. The capital requirement for mass accident risk shall be equal to the following:

$$Health_{massaccident} = \sqrt{\sum_c Health_{ma,c}{}^2}$$

Where the sum is over all countries and $Health_{ma,c}$ denotes the capital requirement for mass accident risk for country c.

2.9.13.11. The capital requirement for mass accident risk for a particular country c, $\mathrm{Health}_{\mathrm{ma,c}}$, shall be equal to the loss in basic own funds of the insurer that would result from an instantaneous loss of an amount that, before deduction of the amounts recoverable from reinsurance and special purpose vehicles is calculated as follows:

$$L_{ma,c} = r_c \cdot \sum_e x_e \cdot E_{(e,c)}$$

Where

- r_c= ratio of persons affected by the mass accident in country c
- x_e= ratio of persons which will be affected by event type *e* as the result of the accident
- $E_{(e,c)}$= sum insured of the insurer for event type *e* in country *c*, and is defined as

$$E_{(e,c)} = \sum_i SI_{(e,i)}$$

where the sum includes all insured persons *i* of the insurer who are insured against event type *e* and are inhabitants of country *c*, and $SI_{(e,i)}$ denotes the value of the benefits payable for the insured person *i* in case of event type *e.*

2.9.13.12. The ratios r_c for each country are given in Appendix C.

2.9.13.13. The event types e to be considered in the mass accident scenario, and the corresponding ratios x_e are as follows:

Event type *e*	x_e
Death caused by an accident	10%
Permanent disability caused by an accident	1.5%
Disability lasting 10 years, caused by an accident	5%
Disability lasting 12 months, caused by an accident	13.5%
Medical treatment caused by an accident	30%

2.9.13.14. In determining $SI_{(e,i)}$, the value of the benefits shall be the sum insured, or where the insurance contract provides for recurring benefit payments the best estimate of the benefit payments in case of event type e. Where the benefits of an insurance contract depend on the nature or extent of any injury resulting from event e, the calculation of the value of the benefits shall be based on the maximum benefits obtainable under the contract which are consistent with the event. For medical expense insurance obligations the value of the benefits shall be based on an estimate of the average amounts paid in case of event e, assuming the insured person is disabled for the duration specified and taking into account the specific guarantees the obligations include.

Accident Concentration Risk

Description

2.9.13.15. The Accident Concentration risk aims to capture the risk of having concentrated exposures, the largest of which is affected by a disaster. For example, a disaster within densely populated office blocks in a financial hub.

Capital Requirement

2.9.13.16. The capital requirement for mass accident risk shall be equal to the following:

$$Health_{concentration} = \sqrt{\sum_{c} Health_{con,c}{}^{2}}$$

Where the sum is over all countries and $Health_{con,c}$ denotes the capital requirement for accident concentration risk for country c.

2.9.13.17. For each country c, the insurer shall determine its largest accident risk concentration, CC, in that country, which shall be equal to the largest number of persons for which all of the following conditions are met:

- the insurance or reinsurance undertaking has a workers' compensation insurance or reinsurance obligation or an group income protection insurance or reinsurance obligation in relation to each of the persons;
- the obligations in relation to each of the persons cover at least one of the events set out in 2.9.13.19;
- the persons are working in the same building which is situated in country c.

2.9.13.18. The capital requirement for accident concentration risk for a particular country c, $\mathrm{Health}_{\mathrm{con,c}}$, shall be equal to the loss in basic own funds of the insurer that would result from an instantaneous loss of an amount that, before deduction of the amounts recoverable from reinsurance and special purpose vehicles is calculated as follows:

$$L_{ma,c} = \sum_{e} x_e \cdot E_{(e,c)}$$

Where

- x_e= ratio of persons which will be affected by event type *e* as the result of the accident
- $E_{(e,c)}$= sum insured of the insurer for concentration group C_c for event type *e* in country *c*, and is defined as

$$E_{(e,c)} = \sum_{i} SI_{(e,i)}$$

where the sum includes all insured persons *i* of the insurer who are insured against event type *e* and are members of concentration group C_c, and $SI_{(e,i)}$ denotes the value of the benefits payable for the insured person *i* in case of event type *e.*

2.9.13.19. The event types e to be considered in the accident concentration scenario, and the corresponding ratios x_e are as follows:

Event type *e*	x_e
Death caused by an accident	10%
Permanent disability caused by an accident	1.5%
Disability lasting 10 years, caused by an accident	5%
Disability lasting 12 months, caused by an accident	13.5%
Medical treatment caused by an accident	30%

2.9.13.20. In determining $\mathrm{SI}_{(e,i)}$, the value of the benefits shall be the sum insured, or where the insurance contract provides for recurring benefit payments the best estimate of the benefit payments in case of event type e. Where the benefits of an insurance contract depend on the nature or extent of any injury resulting from event e, the calculation of the value of the benefits shall be based on the maximum benefits obtainable under the contract which are consistent with the event. For medical expense insurance obligations the value of the benefits shall be based on an estimate of the average amounts paid in case of event e, assuming the insured person is disabled for the duration specified and taking into account the specific guarantees the obligations include.

Pandemic Risk

Description

2.9.13.21. The Pandemic risk aims to capture the risk that there could be a pandemic that results in non-lethal claims, e.g. where victims infected are unlikely to recover and could lead to a large disability claim.

2.9.13.22. It will impact the following products:

- Disability income (both long and short term)
- Products covering permanent and total disability either as a standalone benefit or as part of another product, such as a standalone critical illness product

Capital Requirement

2.9.13.23. The capital requirement for pandemic risk, $\mathrm{Health}_{\mathrm{pandemic}}$, shall be equal to the loss in basic own funds of the insurer that would result from an instantaneous loss of an amount that, before deduction of the amounts recoverable from reinsurance and special purpose vehicles is calculated as follows:

$$L_p = 0.000075 \cdot E$$

2.9.13.24. The pandemic exposure of an insurer shall be equal to the following:

$$\boldsymbol{E} = \sum_{i} \boldsymbol{E_i}$$

2.9.13.25. where the sum includes all insured persons i covered by income protection insurance or reinsurance obligations other than workers' compensation insurance or reinsurance obligations and $\mathrm{E_i}$denotes the value of the benefits payable by the insurer for the insured person i in case of a permanent work disability caused by infectious diseases. The value of the benefits shall be the sum insured or where the contract provides for recurring benefit payments the best estimate of the benefit payments assuming that the insured person is permanently disabled and will not recover.

2.10. Non-Life Underwriting risk

2.10.1.1. The non-life underwriting risk module is currently being tested separately with non-life and composite insurers.

2.11. Ring-fenced funds

2.11.1. Introduction

2.11.1.1. This section deals with the treatment of ring-fenced funds. It sets out the circumstances under which an adjustment has to be made to the own funds due to the existence of a ring-fenced fund and any consequential impact on the calculation of the Solvency Capital Requirement. It also sets out the approach for making these adjustments.

2.11.1.2. The insurer or reinsurer must perform the following steps in order to determine any adjustment to own funds with respect to ring-fenced funds:

1) The insurer or reinsurer must assess whether any own fund items have a reduced capacity to fully absorb losses on a going concern basis due to their lack of transferability within the insurer or reinsurer as described in subsection 2.11.2.1.
2) The insurer or reinsurer must identify all assets and liabilities and own funds subject to the arrangement giving rise to a ring-fenced fund in accordance with subsection 2.11.4.
3) The insurer or reinsurer must calculate the notional Solvency Capital Requirement of a ring-fenced fund in accordance with subsection 2.11.5 and subsection 2.11.6. The insurer or reinsurer must carry out these calculations before making any adjustment to own funds as set out in subsection 2.11.7 to avoid any circularity in the calculation.
4) The insurer or reinsurer must compare the amount of the restricted own-fund items within the ring-fenced fund with the notional Solvency Capital Requirement of the ring-fenced fund, as described in subsection 2.11.7.
5) The insurer or reinsurer must calculate the Solvency Capital Requirement of the insurer or reinsurer as a whole in accordance with subsection 2.11.8. The insurer or reinsurer must carry out these calculations before making any adjustment to own funds as set out in section 2.11.7 to avoid any circularity in the calculation.

2.11.2. Materiality

2.11.2.1. Where a ring-fenced fund is not material, insurers or reinsurers may, as an alternative to the approach set out in subsection 2.11.7, exclude the total amount of restricted own-fund items from the amount eligible to cover the SCR and the Minimum Capital Requirement ("MCR"). In this case, an insurer or reinsurer is not required to calculate a notional SCR for the ring-fenced fund. However, the insurer or reinsurer should include the assets and liabilities of the non-material ring-fenced fund within the remaining part of the insurer or reinsurer. These assets and liabilities will form part of the insurer or reinsurer's overall SCR calculation.

2.11.2.2. The insurer or reinsurer should consider the materiality of a ring-fenced fund by assessing:

1) The nature of the risks arising from or covered by the ring-fenced fund;
2) The nature of the assets and liabilities within the ring-fenced fund;
3) The amount of restricted own funds within the ring-fenced fund, the volatility of these amounts over time and the proportion of total own funds represented by restricted own funds;
4) The proportion of the insurer's or reinsurer's total assets and capital requirements that the ring-fenced fund represents, individually or combined with other ring-fenced funds;
5) The likely impact of the ring-fenced fund on the calculation of the SCR due to the reduced scope for risk diversification.

2.11.3. Identification of a ring-fenced fund

2.11.3.1. A ring-fenced fund arises as a result of the restriction on a going concern basis of own funds items so that they can only be used to cover losses:

1) On a defined portion of the insurer or reinsurer's insurance contracts;
2) In respect of certain policyholders or beneficiaries; or
3) Arising from particular risks.

2.11.3.2. The insurer or reinsurer must identify the nature of any such restrictions affecting assets and own funds within its business and the liabilities in respect of the contracts, policyholders or risks for which such assets and own funds can be used. The assets and liabilities and own funds identified by this process constitute the ring-fenced fund. The existence of a restriction on assets in relation to liabilities which would lead to restricted own funds is the defining characteristic of a ring-fenced fund.

2.11.3.3. Profit participation is not a defining characteristic of a ring-fenced fund but may be present as part of the arrangements. Ring-fenced funds may arise where profit participation forms part of the arrangement and also in the absence of profit participation.

2.11.3.4. While the ring-fenced assets and liabilities should form an identifiable unit in a manner as though the ring-fenced fund were a separate insurer or reinsurer, it is not necessary that these items are managed together as a separate unit or form a separate sub-fund for a ring-fenced fund to arise.

2.11.3.5. Where proceeds of or returns on the assets in the ring-fenced fund are also subject to the ring-fenced fund arrangement, they should be traceable at any given time, i.e. the items need to be identifiable as covered by or subject to the arrangement giving rise to a ring-fenced fund.

2.11.3.6. Restrictions on assets giving rise to a ring-fenced fund might require arrangements for separate management to be put in place but this is not the defining characteristic.

2.11.3.7. 2.11.10 lists arrangements and products that are generally outside the scope of ring-fenced funds.

2.11.3.8. Restrictions which give rise to a ring-fenced fund can arise in a number of ways, including by virtue of:

1) Contractual terms in a policy or that apply to a number of policies;
2) A separate legal arrangement that applies in addition to the terms of a policy;
3) Provisions in the articles of association or statutes of the insurer or reinsurer;
4) National legislation or regulations in respect of product design or the conduct of the relationship between insurer or reinsurers and their policyholders: ring-fenced funds would arise where, as a result of legal provisions protecting the general good in a particular country, an insurer or reinsurer must apply particular assets only for the purposes of a particular part of its business;
5) Provisions of national law, whether transposed or directly applicable;
6) Arrangements specified by order of a court or other competent authority which require separation of or restrictions on assets or own funds in order to protect one or more groups of policyholders.

2.11.3.9. As a minimum, the insurer or reinsurer must compare arrangements within its business with the following types of ring-fenced funds as part of its identification of characteristics and restrictions giving rise to ring-fenced funds:

1) **With-profits:**

   This falls within the type of arrangements outlined in 2.11.3.8 1) 2.11.3.8 4). A fund of assets and liabilities in respect of profit participation ("with profits") business that is only available to cover losses arising in respect of particular policyholders or in relation to particular risks and where the following key features exist:

   a) Policyholders within the ring-fenced fund have distinct rights relative to other business written by the insurer.
   b) There are restrictions on the use of assets, and the return on such assets, within this fund to meet liabilities or losses arising outside the fund.
   c) An excess of assets over liabilities is generally maintained within the fund and this excess is restricted own funds since its use is subject to the restrictions referred to above.
   d) There is generally profit participation within the ring-fenced fund whereby policyholders receive a minimum proportion of the profits generated in the fund which are distributed through additional benefits or lower premium, and, if relevant, shareholders may then receive the balance of such profits.

2) **Legally binding arrangement or trust created for the benefit of policyholders:**

   This could fall within 2.11.3.8 1) or 2), where, within or separate to the policy documentation, an agreement calls for certain proceeds or assets to be placed in trust or subject to a legally binding arrangement or charge for the benefit of the specified policyholders.

3) **Provisions in the articles of association or statutes of the insurer or reinsurer:**

The ring-fenced fund would reflect the restrictions on particular assets or own funds as specified in the articles of association or statutes of the insurer or reinsurer.

4) **National legislation:**

This covers the situation where a ring-fenced fund would arise to reflect the effect of restrictions or arrangements specified in national law.

2.11.3.10. Examples for types of arrangements that give rise to ring-fenced funds according to national legislation are listed below:

1) Criteria that could lead to ring-fenced funds are:
   a) Assets are separately identified within the coverage assets (for the case of insolvency);
   b) It has been contractually agreed between the insurer or reinsurer and the policyholders of the fund (in most cases employees of a particular company) that only the profit of particular assets results in a profit for these policyholders; and
   c) This profit may not be reduced because of a loss occurring outside the ring-fenced fund.
2) Companies which comprise individual cells (protected cell companies). Detail on the regulation and guidance of PCCs in the Isle of Man is provided in the Protected Cell Companies Act 2004, Companies Act 2006, and the Insurance (Protected Cell Companies) Regulations 2004. Although, together, PCCs comprise a single legal entity, the cells operate as distinct units on both a going and gone concern basis. One cell cannot be called upon to support the liabilities of another, or of the (re)insurer as a whole. The assets of the general account or core are not normally available to meet liabilities of individual cells. However, the general account may in some cases be relied on to support an individual cell provided that the assets attributable to the relevant cell have been exhausted.

2.11.4. Identification of assets and liabilities in a ring-fenced fund

2.11.4.1. The assets in a ring-fenced fund are those arising from the investment of premiums received by the insurer or reinsurer in relation to the policies which comprise the ring-fenced fund along with any other payments into and/or assets provided to the fund. Under different arrangements, the assets might comprise specific assets or a pool of assets identified in the contractual arrangements giving rise to the ring-fenced fund.

2.11.4.2. The liabilities in a ring-fenced fund comprise those liabilities attributable to the policies or risks covered by the ring-fenced fund. These include the technical provisions including any future discretionary benefits which the insurer or reinsurer expects to pay. The insurer or reinsurer has to attribute liabilities to the ring-fenced fund only where honouring such liabilities would entail an appropriate and permitted use of the restricted assets or own funds.

2.11.4.3. The methodology and assumptions applied in deriving the technical provisions, including future discretionary benefits, for the purposes of the ring-fenced fund calculations have to be the same as those used in respect of the same obligations in the calculation of overall technical provisions.

2.11.5. Calculation of notional Solvency Capital Requirements

2.11.5.1. Where ring-fenced funds exist, a notional Solvency Capital Requirement has to be calculated for each ring-fenced fund, as well as for the remaining part of the insurer or reinsurer, as if those ring-fenced funds and the remaining part of the insurer or reinsurer were separate insurers or reinsurers.

2.11.5.2. Where multiple ring-fenced funds within an insurer or reinsurer exhibit similar characteristics, the calculation methodology applied to one ring-fenced fund may also be applied to any similar ring-fenced fund, provided the methodology produces sufficiently accurate results for all of the similar ring-fenced funds.

2.11.6. Calculation of notional Solvency Capital Requirements with the Standard Formula

2.11.6.1. The notional Solvency Capital Requirement of a ring-fenced fund is derived by applying the Standard Formula Solvency Capital Requirement calculation to those assets and liabilities within the ring-fenced fund as if it were a separate insurer or reinsurer.

2.11.6.2. Where the calculation of the capital requirement for a risk shock scenario of the Basic Solvency Capital Requirement is based on the impact of a scenario on the basic own funds of the insurer or reinsurer, the impact of the scenario on the basic own funds at the level of the ring-fenced fund and the remaining part of the insurer or reinsurer has to be calculated. The basic own funds at the level of the ring-fenced fund are those restricted own fund items that meet the definition of basic own funds set out below.

Basic own funds shall consist of the following items:

1) The excess of assets over liabilities where assets are valued using the fair value approach to valuation. Liabilities should also be valued in accordance to 1.2. The excess amount referred to here shall be reduced by the amount of own shares held by the insurer or reinsurer.
2) Subordinated liabilities.

2.11.6.3. Notwithstanding 2.11.5.1, the notional Solvency Capital Requirement for each ring-fenced fund is calculated using the scenario-based calculations under which basic own funds for the insurer or reinsurer as a whole are most negatively affected.

2.11.6.4. For the purpose of determining the scenario under which basic own funds are most negatively affected for the insurer or reinsurer as a whole, the insurer or reinsurer must first calculate the sum of the results of the impacts of the scenarios on the basic own funds at the level of each ring-fenced fund, in accordance with 2.11.6.2. The totals at the level of each ring-fenced fund are then added to one another and to the results of the impact of the scenarios on the basic own funds in the remaining part of the insurer or reinsurer.

2.11.6.5. In the case of bidirectional scenarios, if the worst case scenario produces a negative result for a particular capital charge, after taking into account any potential increase of liabilities due to profit participation mechanisms, and would therefore result in an increase in basic own funds within the fund then that charge is set to zero.

2.11.6.6. The capital requirement at the level of each ring-fenced fund is calculated net of the mitigating effect of future discretionary benefits. Where profit participation exists, the assumptions on the variation of future bonus rates have to be realistic and to have due regard to the impact of the shock at the level of the ring-fenced fund and to any contractual, legal or statutory requirements governing the profit participation mechanism. The relevant downward adjustment of the notional Solvency Capital Requirement for the loss-absorbing capacity of technical provisions is not to exceed, in relation to a particular ring-fenced fund, the amount of future discretionary benefits within that fund.

2.11.6.7. The notional Solvency Capital Requirement includes a capital requirement for operational risk as well as any relevant adjustments for the loss-absorbing capacity of technical provisions and deferred taxes.

2.11.6.8. The notional Solvency Capital Requirement for each ring-fenced fund is determined by aggregating the capital requirements under the scenario referred to in 2.11.6.3 for each risk scenario of the Basic Solvency Capital Requirement using the procedure for aggregation of the standard formula prescribed by 2.2.1. Diversification of risks within the ring-fenced fund is therefore permitted.

2.11.7. Adjustments for ring-fenced funds

2.11.7.1. This section outlines the adjustment to own funds for ring-fenced funds.

2.11.7.2. An adjustment to the reconciliation reserve in accordance with 4.3.1.5. 4) is required for restricted own-fund items in a ring-fenced fund.

2.11.7.3. Without prejudice to the requirement set out in 4.3.1.5. that foreseeable dividends and distributions are excluded from the reconciliation reserve, the restricted own fund items in a ring-fenced fund do not include the value of future transfers attributable to shareholders.

2.11.7.4. The insurer or reinsurer has to adjust the reconciliation reserve in accordance with 4.3.1.5 4) to reflect the existence of ring-fenced funds by comparing the amount of the restricted own-fund items within the ring-fenced fund against the notional Solvency Capital Requirement for that ring-fenced fund.

2.11.7.5. For each ring-fenced fund where the restricted own-fund items exceed the notional Solvency Capital Requirement for that ring-fenced fund, the amount of restricted own-fund items in excess of the notional Solvency Capital Requirement is excluded from the amount of own-fund items eligible to cover the Solvency Capital Requirement and the amount of basic own-fund items eligible to cover the Minimum Capital Requirement.

2.11.7.6. If the amount of own funds within a ring-fenced fund is equal to or less than the notional Solvency Capital Requirement of the ring-fenced fund, no adjustment to own funds is made. In this case, all of the own funds within the ring-fenced fund are available to meet the Solvency Capital Requirement and the Minimum Capital Requirement.

2.11.8. Calculation of the Solvency Capital Requirement for the insurer or reinsurer as a whole with the Standard Formula

2.11.8.1. The Solvency Capital Requirement for the insurer or reinsurer as a whole is the sum of the notional Solvency Capital Requirements for each ring-fenced fund and the notional Solvency Capital Requirement for the rest of the insurer or reinsurer.

2.11.8.2. No diversification benefits among ring-fenced funds and/or between ring-fenced funds and the rest of the insurer or reinsurer are reflected in the calculation.

2.11.8.3. Any negative notional Solvency Capital Requirements is set to zero before being aggregated with any positive notional Solvency Capital Requirements of ring-fenced funds and the rest of the insurer or reinsurer.

2.11.9. Deriving the Solvency Capital Requirement split by risk scenario when using the Standard Formula

2.11.9.1. The following principle is proposed to derive the SCR by shock scenario at entity level, when the insurer or reinsurer has one or several ring fenced funds. The principle implies the following two-step calculation in order to identify the effects of non-diversification due to the presence of ring fenced funds:

1st step: calculate the SCR of the entity “as if there were no RFF constraints” (full recognition of diversification effects).

2nd step: calculate the difference between the result of 1st step and the sum of notional SCRs, and allocate this difference between risk scenarios.

2.11.9.2. As this approach implies possibly complex calculations, the effects of non-diversification may be quantified by using one of the following simplifications:

Simplification 1: identify the effects of non-diversification between ring fenced funds at the level of each (high level) risk shown in 2.1.1.1 (e.g. market risk, default risk, underwriting risk etc.), and reallocate these effects between different risks.

Simplification 2: identify the effects of non-diversification between ring fenced funds at the level of the risk shock scenario for each sub-risk shown in 2.1.1.1 (e.g. interest rate risk, equity risk etc.), and reallocate these effects between sub-risks and risks.

2.11.10. Arrangements and products that are generally outside the scope of ring-fenced funds

2.11.10.1. Conventional unit-linked products, i.e. where all of the benefits provided by a contract are directly linked to the value of units in an external fund or to the value of assets contained in an internal fund held by the insurers and reinsurers, whether or not divided into units. The cash value of a policy varies according to the net asset value of the underlying investment assets and the technical provisions in respect of the benefits provided by the contract are represented as closely as possible by those units, as described below.

1) Where the benefits provided by a contract are directly linked to the value of units in an external fund, or to the value of assets contained in an internal fund held by the insurer, whether or not divided into units, the technical provisions in respect of those benefits must be represented as closely as possible by those units or, in the case where units are not established, by those assets.

2) Where the benefits provided by a contract are directly linked to a share index or some other reference value other than those referred to in the second subparagraph, the technical provisions in respect of those benefits must be represented as closely as possible either by the units deemed to represent the reference value or, in the case where units are not established, by assets of appropriate security and marketability which correspond as closely as possible with those on which the particular reference value is based.

2.11.10.2. Conventional index-linked products where all of the benefits provided by a contract are based on a share index or some other reference value. The technical provisions in respect of the benefits are represented as closely as possible either by the units deemed to represent the reference value, or in the case where units are not established, by assets of appropriate security and marketability which correspond as closely as possible with those on which the particular reference value is based, in accordance with 2.11.10.1 a) and b).

2.11.10.3. Provisions (including technical provisions and equalisation provisions) and reserves set up in accounts or financial statements prepared under the requirements applying in a particular jurisdiction. These provisions and reserves do not constitute ring-fenced funds solely by virtue of being set up in such financial statements.

2.11.10.4. Conventional reinsurance business, to the extent that individual contracts do not give rise to restrictions on the assets of the insurer or reinsurer.

2.11.10.5. Coverage assets and similar arrangements that are established for the protection of policyholders in the case of winding-up proceedings, either for the policyholders of the insurer or reinsurer as a whole or for separate sections or groups of policyholders of the insurer or reinsurer; more specifically, assets identified as representing technical provisions.

2.11.10.6. The requirement for the separation of life and non-life business in composite insurers or reinsurers which carry out simultaneously life and non-life and/or health insurance activities. However, a ring-fenced fund may still arise within either or both of the component parts of a composite insurer depending on the nature of the underlying business and arrangements affecting the business.

2.11.10.7. Surplus funds are not ring-fenced solely by virtue of being surplus funds, but could be if they are generated within a ring-fenced fund.

2.11.10.8. Transfer of a portfolio into an insurer or reinsurer during a re-organisation of a business. The separation of assets in respect of the existing business of the receiving insurer from the assets of the transferred portfolio does not constitute a ring-fenced fund if this separation has been put in place under national law to protect the existing business from the fund that is being transferred in only on a temporary basis.

2.12. Marking matched assets to model

2.12.1. Scope

2.12.1.1. The value of the assets backing a portfolio of life insurance obligations, including annuities stemming from non-life insurance contracts, may be marked to model rather than marked to market where the following conditions are met:

1) The insurer has assigned a portfolio of assets, consisting of bonds or assets with similar cash flow characteristics, to cover the best estimate of the portfolio of insurance obligations, and maintains that assignment over the lifetime of the obligations, except for the purpose of maintaining the replication of expected cash flows between assets and liabilities where the cash flows have materially changed;
2) The portfolio of insurance obligations and the assigned portfolio of assets are identified, organised and managed separately from the other activities of the insurer and the assigned portfolio of assets cannot be used to cover losses arising from other activities of the insurer;
3) The expected cash flows of the assigned portfolio of assets (net of expected defaults etc.) replicate the expected cash flows of the portfolio of insurance obligations in the same currency, and any mismatch does not give rise to risks which are material in relation to the risks inherent in the portfolio of insurance obligations;
4) There are no future premium payments in the portfolio of insurance obligations;
5) The portfolio of insurance obligations only includes longevity risk, expense risk, revision risk and/or mortality risk;
6) Where the portfolio of insurance obligations includes mortality risk, the BEP of the portfolio increases by no more than 5% under a mortality risk shock specified in 2.12.1.2 below;

7) There are no options for policyholders in the portfolio of insurance obligations, or only a surrender option where the surrender value does not exceed the value of the assets valued in accordance with the relevant valuation provisions of the Technical Specification;
8) The cash flows of the assigned portfolio of assets are fixed and cannot be changed by the issuers of the assets or any third parties, except where
   a) cash flows are linked to inflation and these assets replicate the cash flows of the portfolio of insurance obligations which are linked to inflation, or
   b) issuers have the right to change the cash flows of the asset in such a manner that the investor receives sufficient compensation to allow it to obtain the original cash flows by reinvesting in assets of an equivalent or better credit quality;
9) The portfolio of insurance obligations consists of the whole of the obligations of each contract in the portfolio (i.e. the obligations of contracts are not split into parts only some of which are in the portfolio).

2.12.1.2. The mortality shock referred to in 2.12.1.1 6) above shall be the more onerous of the following two shocks, applied to contracts for which an increase in mortality rates increases the BEL:

1) An instantaneous permanent (multiplicative) increase of 15% in mortality rates;
2) An instantaneous (additive) increase of 0.15 percentage points to mortality rates (expressed as percentages) in the following 12 months.

2.12.2. Marking assets to model

2.12.2.1. The value of the matched portfolio of assets shall be calculated as:

- The best estimate of the present value of future net cash flows receivable, calculated using the same approach as for the best estimate liability component of technical provisions (i.e. the present value of the expected future cash flows, discounted using risk-free rates), less
- A risk margin, calculated using the same approach as for the risk margin component of technical provisions (i.e. as the cost of holding the capital required for the risks inherent in the asset cash flows)

2.12.2.2. The best estimate cash flows will be net of the expected future default rates. The FSA will provide default probabilities for each future duration, for various types of asset. In accordance with 2.12.1.1 3) above these cash flows will closely match the expected cash flows of the liability portfolio.

2.12.2.3. The risk margin will include the cost of holding capital for all risks inherent in the asset cash flows (see section 2.12.3 below), notably default risk. These risks will be considered non-hedgeable given that the asset cash flows are marked to model rather than to market. However if the risks are actually hedged (i.e. credit derivatives are included in the matched portfolio) this will reduce the SCR and hence the risk margin. Allowance may be made for diversification benefits between the capital required for the asset cash flows and the capital required for the liability cash flows in determining the risk margin for the assets and the liabilities.

2.12.3. SCR calculation

2.12.3.1. The SCR calculation in respect of the asset portfolio will include the capital required for 1 in 200 year shocks to the risks inherent in the best estimate of the present value of asset cash flows. For bonds, loans and mortgages this will include shocks to the default experience over the next 12 months, calculated as per Section 2.7.

2.12.3.2. If the asset portfolio includes risks which are not covered by the Standard Formula then the insurer may not mark the asset portfolio to model unless it calculates the relevant SCR components using an approved Internal Model.

2.12.3.3. The SCR for each matched portfolio is calculated as if it were a standalone entity. The SCR for the whole insurer is calculated as the sum of these SCRs plus the SCR for the remainder of the (non-matched) business.

2.12.4. Adjustments to Own Funds

2.12.4.1. The reduced transferability and reduced scope for diversification between the assigned portfolio and the remainder of the insurer is reflected in the following adjustments to Own Funds.

2.12.4.2. The Own Funds calculation is adjusted to remove from the overall amount of own funds any “restricted own funds” generated within the matched portfolio that are in excess of the capital requirement for that portfolio.

2.13. Financial risk mitigation

2.13.1. Scope

2.13.1.1. This subsection covers financial risk mitigation techniques. Financial risk mitigation techniques include the purchase or issuance of financial instruments (such as financial derivatives) which transfer risk to the financial markets.

2.13.1.2. The use of special purpose vehicles and reinsurance to mitigate underwriting risks are not considered to be financial risk mitigation techniques and are covered in subsection 2.14 – 'Insurance Risk Mitigation'.

2.13.1.3. The following are examples of financial risk mitigation techniques covered by this subsection:

1) Put options bought to cover the risk of falls in the value of assets;
2) Protection bought through credit derivatives or collateral to cover the risk of failure or downgrade in the credit quality of certain exposures;
3) Currency swaps and forwards to cover currency risk in relation to assets or liabilities;
4) Swaptions acquired to cover variable/fixed risks.

2.13.1.4. The allowance of the above financial risk mitigation techniques is subject to the requirements in this subsection and Appendix A being met.

2.13.1.5. Financial risk mitigation techniques do not include the risk mitigating effect provided by discretionary profit participation. Processes and controls that an insurer or reinsurer has in place to manage the investment risk are also excluded. This does not preclude the allowance for future management actions in the calculation of technical provisions subject to the requirements in section 1.2.3.

2.13.2. Conditions for using financial risk mitigation techniques

2.13.2.1. The contractual arrangements and transfer of risk of the risk mitigation technique are legally effective and enforceable in all relevant jurisdictions.

2.13.2.2. The insurer or reinsurer has taken all appropriate steps to ensure the effectiveness of the arrangement and to address the risks related to that arrangement.

2.13.2.3. The insurer or reinsurer is able to monitor the effectiveness of the arrangement and the related risks on an ongoing basis.

2.13.2.4. The insurer or reinsurer has, in the event of a default, insolvency or bankruptcy of a counterparty or other credit event set out in the transaction documentation for the arrangement, a direct claim on that counterparty.

2.13.2.5. The calculation of the SCR using the standard formula should allow for the effects of risk mitigation techniques through a reduction in requirements commensurate with the extent of risk mitigation and an appropriate treatment of any corresponding risks embedded in the use of financial risk mitigation techniques. These two effects should be separated.

2.13.2.6. There should be no double counting of mitigation effects in both own funds and the calculation of the SCR or within the calculation of the SCR.

2.13.2.7. (Re)insurers should not, in their use of risk mitigation techniques, anticipate the shocks considered in the SCR calculation. The SCR is intended to capture unexpected risks.

2.13.2.8. The calculation should be made on the basis of assets and liabilities existing at the date of reference of the solvency assessment and the risk mitigating technique being in force for at least the next 12 months or, if the technique will be in force for a period shorter than 12 months, it should be taken into account prorata temporis for the shorter of the full term of the risk exposure covered or the period that the risk mitigation technique is in force.

2.13.2.9. Where contractual arrangements governing the risk mitigation techniques will be in force for a period shorter than the next 12 months and the insurer or reinsurer intends to replace that risk mitigation technique at the time of its expiry with a similar arrangement, the risk mitigation technique shall be fully taken into account in the Basic Solvency Capital Requirement provided the following qualitative criteria are met:

1) The insurer or reinsurer has a written policy on the replacement of that risk mitigation technique;
2) The replacement of the risk mitigation technique shall not take place more often than every three months;
3) The replacement of the risk mitigation technique is not conditional on any future event which is outside of the control of the insurer or reinsurer. Where the replacement of the risk mitigation technique is conditional on any future event that is within the control of the insurer or reinsurer, then the conditions should be clearly documented in the written policy referred to in point 1);
4) The replacement of the risk mitigation technique shall be realistic, based on replacements undertaken previously by the insurer or reinsurer and consistent with its current business practice and business strategy;
5) The risk that the risk mitigation technique cannot be replaced due to an absence of liquidity in the market is not material;
6) The risk that the cost of replacing the risk mitigation technique increases during the following 12 months is reflected in the SCR;
7) The replacement of the risk mitigation technique would not be contrary to requirements that apply to future management actions set out in section 1.1.

2.13.2.10. With the exception of rolling hedging programmes (see subsection 2.13.5), risk mitigation techniques (for example financial stop-loss processes) not in place at the date of reference of the solvency assessment should not be allowed to reduce the calculation of the SCR with the standard formula.

2.13.2.11. The contractual arrangements governing the risk mitigation technique shall ensure that the extent of the cover provided by the risk mitigation technique and the transfer of risk is clearly defined and incontrovertible.

2.13.2.12. The contractual arrangement shall not result in material basis risk or in the creation of other risks.

2.13.2.13. Basis risk is material if it leads to a misstatement of the risk mitigating effect on the insurer's or reinsurer's Basic Solvency Capital Requirement that could influence the decision-making or judgement of the intended user of that information, including the supervisory authorities.

2.13.2.14. The determination that the contractual arrangements and transfer of risk is legally effective and enforceable in all relevant jurisdictions shall be based on the following:

1) Whether the contractual arrangement is subject to any condition which could undermine the effective transfer of risk, the fulfilment of which is outside the direct control of the insurer or reinsurer;
2) Whether there are any connected transactions which could undermine the effective transfer of risk.

2.13.3. Basis Risk

2.13.3.1. Where the underlying assets or references of the financial mitigation instrument do not perfectly match the exposures of the insurer, the financial risk mitigation technique should only be allowed in the calculation of the SCR with the standard formula if the insurer or reinsurer can demonstrate that the basis risk is not material compared to the mitigation effect. Insurers shall consider that a risk mitigation technique does not contain material basis risk where the following conditions are simultaneously met:

1) The exposure covered by the risk mitigation technique has a sufficiently similar nature to the risk exposure actually held by the insurer; and
2) The changes in value of the exposure covered by the risk mitigation technique closely mirror the changes in value of the risk exposure of the insurer or reinsurer under all scenarios considered in the relevant risk shock scenarios of the SCR.

2.13.3.2. Before allowing for a financial risk mitigation technique in the calculation of the SCR with the standard formula, insurers and reinsurers shall ascertain that they are able to provide sufficient evidence on the fulfilment of the requirements according to the following principles:

1) The materiality of the basis risk shall be assessed with reference to the exposure covered by the risk mitigation technique and the risk exposure of the insurer or reinsurer, without considering other elements of the balance sheet, unless, any other element keeps a continuous and necessary connection with the risk exposure of the insurer or reinsurer;
2) The similarity of the nature of the exposures shall be assessed taking into account at least the type of instruments or arrangements involved, their terms and conditions, the rules governing the markets where their prices are derived, and a comparison with other risk mitigation techniques having the same nature as the risk exposure of the insurer or reinsurer;

3) The assessment should refer to the behaviour of both exposures under the scenario considered in the relevant risk shock scenarios of the SCR, keeping in mind that such scenarios represent an event aimed to achieve the confidence level of 99.5% over a one-year period. In addition, the assessment shall at least allow for:
   a) The degree of symmetry among both exposures;
   b) Any non-linear dependencies under the relevant scenario;
   c) Any relevant asymmetry of the behaviours in case of bi-directional scenarios;
   d) The levels of diversification of each respective exposure;
   e) Any relevant risks not captured explicitly in the standard formula;
   f) The whole payout distribution applying to the risk mitigation technique.

2.13.3.3. Where the assessment, set out in 2.13.3.1, results in a lack of sufficient evidence that the change in value of the exposure, covered by the risk mitigation technique, will mirror all material changes in the value of the risk exposure of the insurer or reinsurer, insurers and reinsurers shall consider that the risk mitigation technique has a material basis risk.

2.13.4. Credit quality of the counterparty

2.13.4.1. Only financial protection provided by counterparties with a credit quality step equal or equivalent to at least 3 should be allowed in the assessment of the SCR. For unrated counterparties, the insurer should be able to demonstrate that the counterparty meets at least the standard of a company with a credit quality step of 3.

2.13.4.2. In the event of default, insolvency or bankruptcy of the provider of the financial risk mitigation instrument – or other credit events set out in the transaction document – the financial risk mitigation instrument should be capable of liquidation in a timely manner or retention.

2.13.4.3. If the financial risk mitigation technique is collateralised, the assessment of the credit quality of the protection should consider the collateral if the requirements set out in subsection 2.13.6 are met, and the risks arising from the collateral are appropriately captured in the SCR (i.e. the counterparty default shock scenario).

2.13.5. Credit derivatives

2.13.5.1. The reduction of the SCR based on the mitigation of credit exposures by using credit derivatives should only be allowed where insurers have in place generally applied procedures for this purpose and consider generally admitted criteria. Requirements set out in other financial sectors for the same mitigation techniques may be considered as generally applied procedures and admitted criteria.

2.13.5.2. In order for a credit derivative contract to be recognised, the credit events specified by the contracting parties must at least cover:

1) Failure to pay the amounts due under the terms of the underlying obligation that are in effect at the time of such failure (with a grace period that is closely in line with the grace period in the underlying obligation);
2) Bankruptcy, insolvency or inability of the obligor to pay its debts, or its failure or admission in writing of its inability generally to pay its debts as they fall due, and analogous events; and
3) Restructuring of the underlying obligation, involving forgiveness or postponement of principal, interest or fees that results in a credit loss event.

2.13.5.3. A mismatch between the underlying obligation and the reference obligation under the credit derivative or between the underlying obligation and the obligation used for purposes of determining whether a credit event has occurred is permissible only if the following conditions are met:

1) The reference obligation or the obligation used for the purposes of determining whether a credit event has occurred, as the case may be, ranks pari passu with, or is junior to, the underlying obligation; and
2) The underlying obligation and the reference obligation or the obligation used for the purposes of determining whether a credit event has occurred, as the case may be, share the same obligor (i.e. the same legal entity) and there are in place legally enforceable cross-default or cross-acceleration clauses.

2.13.6. Collateral

2.13.6.1. 'Collateral arrangements' means arrangements under which either:

1) A collateral provider transfers full ownership of the collateral to the collateral taker for the purpose of securing or otherwise covering the performance of a relevant obligation; or
2) A collateral provider provides collateral by way of security in favour of, or to, a collateral taker, and the legal ownership of the collateral remains with the collateral provider or a custodian when the security right is established.

2.13.6.2. In the calculation of the Basic Solvency Capital Requirement, collateral arrangements shall only be recognised where, in addition to the requirements in 2.13.2.1–2.13.2.7, the following criteria are met:

1) The insurer or reinsurer transferring the risk shall have the right to liquidate or retain, in a timely manner, the collateral in the event of a default, insolvency or bankruptcy or other credit event of the counterparty;
2) There is sufficient certainty as to the protection achieved by the collateral because either:
   a) It is of sufficient credit quality and liquidity and is sufficiently stable in value; or
   b) It is guaranteed by a counterparty, other than a counterparty referred to in 2.7.3.7 who has been assigned a risk factor for concentration risk of 0%;

3) There is no material positive correlation between the credit quality of the counterparty and the value of the collateral;
4) The collateral is not securities issued by the counterparty or a related entity of that counterparty.

2.13.7. Segregation of assets

2.13.7.1. Where the liabilities of the counterparty are covered by strictly segregated assets, under arrangements that ensure the same degree of protection as collateral arrangements, then the segregated assets should be treated as if they were collateral with an independent custodian.

2.13.7.2. The segregated assets should be held with a deposit-taking institution with a credit quality step equal or equivalent to at least 3.

2.13.7.3. The segregated assets should be individually identifiable and should only be changed subject to the consent of the insurer or reinsurer.

2.13.7.4. The insurer or reinsurer should have a right to directly obtain ownership of the assets without any restriction, delay or impediment in the event of the default, insolvency or bankruptcy of the counterparty or other credit event set out in the transaction documentation.

2.14. Insurance risk mitigation

2.14.1. Scope

2.14.1.1. This subsection, together with Appendix A, covers how insurance risk mitigation techniques may be reflected in the calculation of the SCR. Insurance risk mitigation techniques include the use of reinsurance contracts or special purpose vehicles to transfer underwriting risks.

2.14.2. Conditions for reflecting insurance risk mitigation techniques in the SCR

2.14.2.1. The contractual arrangements and transfer of risk of the risk mitigation technique are legally effective and enforceable in all relevant jurisdictions.

2.14.2.2. The insurer or reinsurer has taken all appropriate steps to ensure the effectiveness of the arrangement and to address the risks related to that arrangement. The mere fact that the probability of a significant variation in either the amount or timing of payments by the insurer, reinsurer or SPV is remote does not by itself mean that the insurer, reinsurer or SPV has not assumed risk.

2.14.2.3. The insurer or reinsurer is able to monitor the effectiveness of the arrangement and the related risks on an ongoing basis.

2.14.2.4. The insurer or reinsurer has, in the event of a default, insolvency or bankruptcy of a counterparty or other credit event set out in the transaction documentation for the arrangement, a direct claim on that counterparty.

2.14.2.5. The calculation of the SCR using the standard formula should allow for the effects of risk mitigation techniques through a reduction in requirements commensurate with the extent of risk mitigation, and an appropriate treatment of any corresponding risks embedded in the use of financial risk mitigation techniques. These two effects should be separated.

2.14.2.6. There should be no double counting of mitigation effects in both own funds and the calculation of the SCR or within the calculation of the SCR. The contractual arrangements and transfer of risk of the risk mitigation technique are legally effective and enforceable in all relevant jurisdictions.

2.14.2.7. Insurers should not, in their design and use of risk mitigation techniques, anticipate the shocks considered in the SCR calculation. The SCR is intended to capture unexpected risks.

2.14.2.8. The calculation should be made on the basis of assets and liabilities existing at the date of reference of the solvency assessment and the risk mitigating technique being in force for at least the next 12 months, or, if it will be in force for a period shorter than 12 months, it should be taken into account prorata temporis for the shorter of the full term of the risk exposure covered or the period that the risk mitigation technique is in force.

2.14.2.9. Where contractual arrangements governing the risk mitigation techniques will be in force for a period shorter than the next 12 months and the insurer or reinsurer intends to replace that risk mitigation technique at the time of its expiry with a similar arrangement, the risk mitigation technique shall be fully taken into account in the SCR provided the following criteria are met:

1) The insurer or reinsurer has a written policy on the replacement of that risk mitigation technique;
2) The replacement of the risk mitigation technique shall not take place more often than every three months;
3) The replacement of the risk mitigation technique is not conditional on any future event which is outside of the control of the insurer or reinsurer. Where the replacement of the risk mitigation technique is conditional on any future event that is within the control of the insurer or reinsurer, then the conditions should be clearly documented in the written policy referred to in 1);
4) The replacement of the risk mitigation technique shall be realistic, based on replacements undertaken previously by the insurer or reinsurer and consistent with its current business practice and business strategy;
5) The risk that the risk mitigation technique cannot be replaced due to an absence of liquidity in the market is not material;
6) The risk that the cost of replacing the risk mitigation technique increases during the following 12 months is reflected in the SCR;
7) The replacement of the risk mitigation technique would not be contrary to requirements that apply to future management actions set out in section 1.1.

2.14.2.10. Risk mitigation techniques not in place at the date of reference of the solvency assessment should not be allowed to reduce the calculation of the SCR with the standard formula.

2.14.2.11. The contractual arrangements governing the risk mitigation technique shall ensure that the extent of the cover provided by the risk mitigation technique and the transfer of risk is clearly defined and incontrovertible.

2.14.2.12. The contractual arrangement shall not result in material basis risk or in the creation of other risks, unless these are properly captured in the SCR.

Basis risk is material if it leads to a misstatement of the risk mitigating effect on the insurer's or reinsurer's SCR that could influence the decision-making or judgement of the intended user of that information, including the supervisory authorities.

2.14.2.13. The determination that the contractual arrangements and transfer of risk is legally effective and enforceable in all relevant jurisdictions shall be based on the following:

1) Whether the contractual arrangement is subject to any condition which could undermine the effective transfer of risk, the fulfilment of which is outside the direct control of the insurer or reinsurer;
2) Whether there are any connected transactions which could undermine the effective transfer of risk.

2.14.2.14. In addition, the following conditions must be met in order for insurers and reinsurers to take into account the insurance risk mitigation technique in the SCR. In the case of reinsurance contracts the counterparty shall be:

1) An insurer or reinsurer which complies with the Solvency Capital Requirement under the FSA's risk-based solvency regime or, in the case of an insurer or reinsurer located in an EU member state, under EIOPA's Solvency II regime;
2) A third-country insurer or reinsurer, situated in a country whose solvency regime is deemed by EIOPA to be equivalent to Solvency II and which complies with the solvency requirements of that third country; or
3) A third-country insurer or reinsurer, which is not situated in a country whose solvency regime is deemed equivalent to Solvency II which has been assigned to credit quality step 3 or better in accordance with Appendix B.

2.14.2.15. Finite reinsurance, or similar arrangements, where the lack of effective risk transfer is comparable to that of finite reinsurance, that meet the requirements set out in this section, shall be recognised in the calculation of the Basic Solvency Capital Requirement only to the extent underwriting risk is transferred to the counterparty of the contract.

Where finite reinsurance means:

- Reinsurance under which the explicit maximum loss potential, expressed as the maximum economic risk transferred, arising both from a significant underwriting risk and timing risk transfer, exceeds the premium over the lifetime of the contract by a limited but significant amount, together with at least one of the following features:
  1) Explicit and material consideration of the time value of money;
  2) Contractual provisions to moderate the balance of economic experience between the parties over time to achieve that target risk transfer.

2.14.2.16. The allowance of insurance risk mitigation techniques is subject to the requirements in this subsection being met.

2.14.3. Basis Risk

2.14.3.1. When an insurance risk mitigation technique includes basis risk (for example as might happen where payments are made according to external indicators rather than directly related to losses) the insurance risk mitigation instruments are only permissible in the calculation of the SCR with the standard formula if the insurer or reinsurer can demonstrate that the basis risk is not material compared to the mitigation effect.

2.14.3.2. Basis risk is material if it leads to a misstatement of the risk mitigating effect on the insurer's or reinsurer's SCR that could influence the decision-making or judgement of the intended user of that information, including the supervisory authorities.

2.14.3.3. Insurers shall consider the risk mitigation technique to have material basis risk where:

1) The differences in behaviour resulting from the assessment have, or may have, an actual or potential material impact on the outcome of the risks of the insurer covered by such arrangement; or
2) The exposure covered by the financial risk mitigation technique is expressed in a currency different from the risk exposure actually held by the insurer, unless the currencies involved are pegged within a sufficiently narrow corridor.

Material basis risk resulting from currency risk in insurance risk mitigation techniques

2.14.3.4. In cases where insurers and reinsurers transfer underwriting risk using a reinsurance contract or special purpose vehicles which create additional currency risk, the insurer or reinsurer may take into account the risk mitigation effect arising from these insurance risk mitigation techniques in the calculation of the standard formula SCR, provided that this calculation is carried out in accordance with 2.14.3.5 and 2.14.3.6.

2.14.3.5. Where there is any material currency risk stemming from the risk mitigation effects linked to the underwriting risk shock scenarios , and this currency risk is not already included in the SCR currency risk shock scenario, it shall be taken into account, for each foreign currency, in the respective underwriting risk shock scenarios at the most granular level of the standard formula application by adding to the capital requirement calculated according to Section 2, a 25% difference between:

1) The hypothetical capital requirement for underwriting risk at the most granular level of the standard formula application that would apply if the risk of the currency shock scenario would materialise with the standard shock;
2) The capital requirement for underwriting risk at the most granular level of the standard formula application.

2.14.3.6. Where the same insurance risk mitigation technique with basis risk is used in several scenarios of the underwriting risk capital requirement, the overall risk charge for basis risk in a reinsurance contract or special purpose vehicle (as a difference between the hypothetical solvency capital requirement that would apply if the risk of the currency shock scenario would materialise with the standard shock and the overall solvency capital requirement) shall not exceed 25% of the capacity of the non-proportional reinsurance contract or special purpose vehicle arrangement. For the purpose of QIS4, the capacity of a non-proportional reinsurance contract or special purpose vehicle arrangement should be consistent with the maximum capacity which has been used within shock scenarios which are based on the impact of a scenario on the basic own funds of insurers and reinsurers for these insurance risk mitigation techniques.

2.14.4. Credit quality of the counterparty

2.14.4.1. Providers of insurance risk mitigation should meet the following requirements:

1) Reinsurance entities should meet their current capital requirements or have a credit quality step equal or equivalent to at least 3;
2) Isle of Man or EEA SPVs that are currently authorised should meet the requirements set out in Manx law or the national law of the Member States in which they are authorised;
3) Non-EEA SPVs should fully fund their exposure to the risks assumed from the insurer or reinsurer through the proceeds of a debt issuance or other financing mechanism, and, the repayments rights of the providers of such debt or financing mechanism should be subordinated to the reinsurance obligations of the insurer or reinsurer.

2.14.4.2. The assessment of the above should be based on the latest available information, which should be no more than 12 months old.

2.14.4.3. Notwithstanding the above, to the extent that collateral, meeting the requirements in subsection 2.13.6 has been provided, the risk mitigation technique should be recognised up to the amount of the collateral.

2.14.4.4. Risk mitigation may be used to mitigate the credit risk arising from reinsurance counterparties.

2.15. Solo treatments of participations

2.15.1. Introduction

2.15.1.1. The intention of this section is to provide an overview of the treatment of participations in each area of these technical specifications.

2.15.1.2. Once a participation has been identified in accordance with 2.15.2, the treatment of equity investments in that related entity, valued in accordance with subsection 2.15.5, and of any other own-fund items, held in that related entity by the participating entity is provided in 2.15.6.

2.15.2. Characteristics of a participation

2.15.2.1. A participation is constituted by share ownership or by the exertion of a dominant or significant influence over another entity. The following sub-sections describe how both types of participation can be identified.

2.15.2.2. The identification is based on an assessment from a solo perspective.

2.15.3. Participations by virtue of share ownership

2.15.3.1. When identifying a participation based on share ownership, directly or by way of control, the participating insurer has to identify:

1) Its percentage holding of voting rights and whether this represents at least 20% of the potential related entity's voting rights; and
2) Its percentage holding of all classes of share capital issued by the related entity and whether this represents at least 20% of the potential related entity's issued share capital.

Where the participating insurer's holding represents at least 20% in either case its investment should be treated as a participation.

2.15.3.2. Where the participation is in an insurer or reinsurer subject to the FSA's new risk-based regulatory regime or the European Solvency II regime, the assessments under 2.15.3.1. 1) above only relate to paid-in ordinary share capital referred to in 4.3.1.3 whilst participations under 2.15.3.1. 2) relate to both paid-in ordinary share capital referred to in 4.3.1.3 and paid-in preference shares.

2.15.4. Participations by virtue of the exertion of dominant or significant influence

2.15.4.1. When identifying a related entity on the basis that the insurer can exert a dominant or significant influence over another entity, the FSA will consider the following:

1) Current shareholdings and potential increases due to the holding of options, warrants or similar instruments;
2) Membership rights of a mutual or mutual-type entity and potential increases in such rights;

3) Representation on the administrative, management or supervisory board of the potential related entity;
4) Involvement in policy-making processes, including decision making about dividends or other distributions;
5) Material transactions between the participating entity and potential related entity;
6) Interchange of managerial personnel;
7) Provision of essential technical information;
8) Management on a unified basis.

The FSA will consider any initial assessment by the participating entity in accordance with points 1) to 8) of this paragraph.

2.15.5. Valuation

2.15.5.1. Holdings in related entities are to be valued at the quoted market price in an active market. If this valuation is not possible:

1) For holdings in insurers and reinsurers:
   a) Subsidiary insurers have to be valued with the equity method that is based on the FSA's risk-based regulatory regime (or a Solvency II consistent recognition and measurement for subsidiary insurers located in an EU member state) for the subsidiary's balance sheet.
   b) Related insurers, other than subsidiaries, would also be valued with the equity method using the FSA's risk-based regulatory regime (or a Solvency II consistent recognition and measurement for related insurers located in an EU member state) for the holding's balance sheet. However, if this is not possible, an alternative valuation method in accordance with the requirements in Section 1 should be used.
2) For holdings in entities other than in insurers and reinsurers:
   a) Holdings in entities other than insurers and reinsurers have to be valued with the equity method that is based on a recognition and measurement consistent with the FSA's risk-based regulatory regime for the subsidiary's balance sheet. If that is not practicable, the equity method would be applied to the related entity's balance sheet following IFRSs– with the amendment that goodwill and other intangible assets would need to be deducted. If this is not possible for related entities, other than subsidiaries, an alternative valuation method in accordance with the requirements in Section 1 should be used.

2.15.6. Treatment of participations in the calculation of the Solvency Capital Requirement with the Standard Formula

2.15.6.1. The calculation of the Solvency Capital Requirement in accordance with the standard formula for participations does not require the aggregation of the investment in own funds items in respect of each participation. The equity risk charge relevant to the investment in ordinary or preference share capital of the related entities is determined independently from the application of the relevant risk charges (e.g. interest, spread, concentration, currency) to any investment in subordinated liabilities of the related entity, which is treated as financial instruments.

2.15.6.2. When applying the standard formula to the equity and subordinated liability components of a participation, the insurer or reinsurer has to:

1) Apply the interest and spread risk shock scenarios set out in subsection 2.6.5 and 2.6.9 relevant for financial instruments to holdings of subordinated liabilities.
2) Apply the relevant equity risk charges to equity holdings as set out in subsection 2.6.6.
3) Apply additional market risk shock scenarios, such as currency, where appropriate.

3. Minimum Capital Requirement

3.1. Introduction

3.1.1.1. This section provides instructions for calculating the Minimum Capital Requirement (MCR) of the insurer or reinsurer. The calculation of the MCR in QIS4 will test two different methods:

1) the method used by EIOPA in Solvency II, and
2) a linear formula (i.e. a percentage) of the SCR

3.1.1.2. The MCR in both cases is likely to be subject to an absolute floor, expressed in Pound Sterling, depending on the nature of the insurer or reinsurer.

3.2. Solvency II MCR Calculation

3.2.1.1. The calculation of the MCR combines a linear formula with a floor of 25% and a cap of 45% of the SCR. The MCR is subject to an absolute floor, expressed in Pound Sterling, depending on the nature of the insurer.

3.2.1.2. The following input information is required:

1) MCR_{linear} is the linear formula component for life insurance or reinsurance obligations;
2) SCR is the SCR of the insurer or reinsurer;

3) $AMCR$ is the absolute floor of the MCR clarified further in the paragraph below.

3.2.1.3. The values of the absolute floor, $AMCR$, is:

- £2,900,000 for life insurers, including captive insurers;
- £2,800,000 for reinsurers, except in the case of captive reinsurers, in which case the MCR should be no less than £900,000.

3.2.1.4. The combined MCR of the insurer is calculated as follows:

$$MCR_{combined} = \min(\max(0.25 \cdot SCR; MCR_{linear}); 0.45 \cdot SCR)$$

3.2.1.5. The MCR of the insurer should be calculated as follows:

$$MCR = \max(MCR_{combined}; AMCR)$$

3.2.1.6. The linear formula component, MCR_{linear}, for life insurers or reinsurers is calculated as follows:

$$MCR_{(linear,l)} = [0.037] \cdot TP_{(life,1)} - [0.052] \cdot TP_{(life,2)} + [0.007]TP_{(life,3)} + [0.021] \cdot TP_{(life,4)} + [0.0007] \cdot CAR$$

Where:

- $TP_{(life,1)}$ is the technical provisions without a risk margin in relation to guaranteed benefits for life insurance obligations with profit participation, after deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles, with a floor equal to zero, and technical provisions without a risk margin for reinsurance obligations where the underlying life insurance obligations include profit participation, after deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles, with a floor equal to zero;
- $TP_{(life,2)}$ is the technical provisions without a risk margin in relation to future discretionary benefits for life insurance obligations with profit participation, after deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles, with a floor equal to zero;
- $TP_{(life,3)}$ is the technical provisions without a risk margin for index-linked and unit-linked life insurance obligations and reinsurance obligations relating to such insurance obligations, after deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles, with a floor equal to zero;
- $TP_{(life,4)}$ is the technical provisions without a risk margin for all other life insurance and reinsurance obligations, after deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles, with a floor equal to zero;
- CAR is the total capital at risk, being the sum, in relation to each contract that give risk to life insurance or reinsurance obligations, of the capital at risk of the contracts.

3.3. Linear MCR Calculation

3.3.1.1. The following input information is required:

1) SCR is the SCR of the insurer;
2) $FMCR$ is the floor of the MCR, as defined in 3.3.1.3.

3.3.1.2. The MCR is calculated using the following equation:

$$MCR = \max(X\% \cdot SCR; FMCR)$$

3.3.1.3. The value of the absolute floor, $FMCR$, is £Y.

3.3.1.4. Note, the above values X% and £Y are yet to be finalised and we will use the QIS2, QIS3 and QIS4 results to calibrate values for each.

4. Own Funds

4.1. Introduction

4.1.1.1. This section provides specifications for the classification and eligibility of own funds.

4.1.1.2. QIS4 will operate on the basis of applying the approach set out in this section to all existing items of own funds. Full criteria are specified for three tiers of classification of own funds, and the extent to which the own funds within each tier may be used to cover capital requirements.

4.2. Definitions (for this Own Funds section):

4.2.1.1. 'Alternative coupon satisfaction mechanism (ACSM)' means a term in the contractual arrangements governing an own-fund item that negates the obligation to pay a distribution in cash by issuing ordinary share capital to the holder of the own-fund item instead.

4.2.1.2. 'Instrument' means a security relating to an own-fund item.

4.2.1.3. 'Principal stock settlement' means a term in the contractual arrangements governing an own-fund item that requires the holder of the own-fund item to receive ordinary shares in the event that a call is not exercised.

4.2.1.4. 'Repayment or redemption' means the repurchase or buyback of any own-fund item or any other arrangement that has the same economic effect. This includes share buybacks, tender operations, repurchase plans and repayment of principal at maturity for dated items as well as repayment or redemption following the exercise of an issuer call option.

4.2.1.5. 'Retained earnings' means the portion of net income which is retained by an insurer that is not immediately distributed to shareholders as dividends.

4.2.1.6. 'Share premium account' means a separate account or reserve to which share premiums are transferred in accordance with Manx or other relevant national legislation.

4.2.1.7. ‘Share premium’ means the amount between the value received at issuance and the nominal value of the share at issuance.

4.2.1.8. ‘Step-up’ means a term in the contractual arrangements governing an own-fund item that leads to distributions on the item being increased after a specified date or event.

4.3. Tier 1 Own Funds

4.3.1.1. Basic own-fund items shall be classified in Tier 1 where they are listed in 4.3.1.2 and display the features set out in 4.4.

List of own-fund items

4.3.1.2. The following basic own-fund items shall be classified in Tier 1, where those items display the features set out in 4.4:

1) The part of the excess of assets over liabilities, valued in accordance with Section 1 of this Technical Specification, comprising the following items:
   a) Paid-in ordinary share capital and the related share premium account;
   b) Paid-in initial funds, members' contributions or the equivalent basic own-fund item for mutual and mutual-type insurers;
   c) Paid-in subordinated mutual member accounts;
   d) Surplus funds that are not considered insurance and reinsurance liabilities;
   e) Paid-in preference shares and the related share premium account;
   f) A reconciliation reserve as defined in 4.3.1.5;
2) Paid-in subordinated liabilities valued in accordance with Section 1 of this Technical Specification.

Paid-in ordinary share capital

4.3.1.3. For the purposes of 4.3.1.2. 1) a), paid-in ordinary share capital shall be identified by the following properties:

1) The shares are issued directly by the insurer with the prior approval of its shareholders or, where permitted, its management body, and
2) The shares entitle the owner to claim on the residual assets of the insurer or reinsurer in the event of its winding-up. The claim shall be proportionate to the amount of such items issued, not fixed nor subject to a cap.

4.3.1.4. Where an insurer describes more than one class of share as ordinary share capital:

1) The criteria for classification as ordinary share capital are applied to each class separately.
2) A class of ordinary shares is only classified as ordinary share capital provided that it meets all relevant criteria, in particular those specified in 4.4.
3) Differences between classes which provide for one class to rank ahead of another or which create any preference as to distributions have to be identified and only the class which ranks after all other claims and has no preferential rights is classified as ordinary share capital.

4) Classes ranking ahead of the most subordinated class or which have other preferential features which do not satisfy the criteria for ordinary share capital are classified as preference shares provided they meet all relevant criteria for that item.

Reconciliation reserve

4.3.1.5. The reconciliation reserve referred to in point 4.3.1.2. 1) f) equals the total excess of assets over liabilities reduced by:

1) The amount of own shares held by the insurer and reinsurer;
2) Any foreseeable dividends, distributions and charges;
3) The basic own-fund items included in points (a) to (e) of 4.3.1.2. 1), 4.5.1.2. 1) and 4.7.1.2. 1);
4) The restricted own-fund items that
   a) Exceed the notional Solvency Capital Requirement in the case of ring-fenced funds determined in accordance with 2.11.7;
   b) Are excluded in accordance with 2.11.7;

4.3.1.6. The excess of assets over liabilities referred to in 4.3.1.5 includes the amount that corresponds to the expected profit included in future premiums.

4.3.1.7. The determination of whether, and to what extent, the reconciliation reserve displays the features set out in section 4.4 shall not assess the features of the assets and liabilities that are included in computing the excess of assets over liabilities or the underlying items in the insurers' financial statements.

Own shares and foreseeable dividends

4.3.1.8. For the purposes of 4.3.1.5. 1), own shares held by the insurer shall include direct and indirect holdings.

4.3.1.9. For the purposes 4.3.1.5. 2), foreseeable dividends and distributions shall fulfil the following criteria:

1) A dividend or distribution shall be foreseeable at the latest when it is declared or approved by the administrative, management or supervisory body of the insurer or reinsurer and the other persons who effectively run the insurer, regardless of any requirement for formal approval at the annual general meeting;
2) Where an insurer holds a participation in another insurer which has a foreseeable dividend, the former insurer shall make no reduction to its reconciliation reserve for that foreseeable dividend.

4.4. Features determining classification as Tier 1

4.4.1.1. The basic own-fund items listed in 4.3.1.2 shall display the following features in order to be classified as Tier 1.

Subordination

4.4.1.2. To be eligible as Tier 1, the basic own-fund item must:

1) In the case of items referred to in 4.3.1.2. 1) a) and b), rank after all other claims in the event of winding-up proceedings regarding the insurer or reinsurer;
2) In the case of items referred to in points 4.3.1.2. 1) c) and e) and 4.3.1.2. 2), rank to the same degree as, or ahead of, the items referred to in 4.3.1.2. 1) a) and b), but after items listed in 4.5.1.2 and 4.7.1.2 that display the features set out in 4.5.1.4 and 4.8.1.1 respectively and after the claims of all policyholders and beneficiaries and non-subordinated creditors.

Absence of features causing or accelerating insolvency

4.4.1.3. To be eligible as Tier 1, the basic own-fund item must not include features which may cause the insolvency of the insurer or reinsurer or may accelerate the process of the insurer becoming insolvent.

4.4.1.4. In the case of an item referred to in 4.3.1.2. 1) a), b) and d),features which may cause the insolvency of the insurer or reinsurer or accelerate the process of the insurer becoming insolvent include:

1) The holder of the security relating to an own-fund item is in a position to petition for the insolvency of the issuer in the event of distributions not being made;
2) The item would be treated as a liability in a determination of whether the liabilities of an insurer exceed its assets in a test of insolvency under Manx law;
3) The holder of the security relating to an own-fund item may, as a result of a distribution being cancelled, be granted the ability to cause full or partial payment of the amount invested, or to demand penalties or any other compensation that could result in a decrease of own funds.

4.4.1.5. In the case of an item referred to in 4.3.1.2. 1) c), e) and 2), features which may cause the insolvency of the insurer or reinsurer or accelerate the process of the insurer becoming insolvent include:

1) The holder of the security relating to an own-fund item is in a position to petition for the insolvency of the issuer in the event of distributions not being made;
2) The item would be treated as a liability in a determination of whether the liabilities of an insurer exceed its assets in a test of insolvency under Manx law;
3) The terms of the contractual arrangement governing the own-fund item could prevent the insurer from continuing to do business as a going concern in the best interests of the policyholders, other beneficiaries and senior creditors in priority to the interests of the holders of the security, by specifying circumstances or conditions which, if met, would require the initiation of insolvency or any other procedure which would prejudice the continuance of the insurer or its business as a going concern;

4) The holder of the security relating to an own-fund item may, as a result of a distribution being cancelled, be granted the ability to cause full or partial payment of the amount invested, or to demand penalties or any other compensation that could result in a decrease of own funds.

Immediate availability to absorb losses

4.4.1.6. To be eligible as Tier 1 the basic own-fund item must be immediately available to absorb losses.

4.4.1.7. A basic own-fund item complies with 4.4.1.6 provided it is able to absorb losses immediately if there is non-compliance by the insurer with the Solvency Capital Requirement and does not hinder the recapitalisation of the insurer;

4.4.1.8. An own-fund item is immediately available to absorb losses, if:

1) The terms of the contractual arrangement governing the own-fund item do not include any terms which prevent or act as a disincentive to new own funds being raised.
2) The terms of the contractual arrangement do not require that any own funds arising from a new or increased own-fund item improve or maintain the position of existing holders of an original item;
3) The terms of the contractual arrangement governing the own-fund item do not include terms that prevent distributions on other own-fund items;
4) The terms of the item, or any connected arrangement, do not provide that:
   a) Any new own funds items raised by the insurer are junior to that item in conditions of stress or other circumstances where additional own funds may be needed, or
   b) The item is subject to an automatic conversion into a more senior item in terms of subordination, in conditions of stress, other circumstances where own funds may be needed or structural change including a merger or acquisition.

Principal loss absorbency

4.4.1.9. To be eligible as Tier 1, a basic own-fund item, in the case of items referred to in 4.3.1.2. 1) c), e) and 2), must possess one of the following principal loss absorbency mechanisms to be triggered at the trigger event specified in 4.4.1.30:

1) The nominal or principal amount of the basic own-fund item is written down as set out below;
2) The basic own-fund item automatically converts into a basic own-fund item listed in 4.3.1.2. 1) a) or b) as set out below; or
3) A principal loss absorbency mechanism that achieves an equivalent outcome to the principal loss absorbency mechanisms set out in points 1) or 2).

4.4.1.10. For the purposes of 4.4.1.9. 1), the nominal or principal amount of the basic own-fund item shall be written down in such a way that all of the following are reduced:

- The claim of the holder of that item in the event of winding-up proceedings;
- The amount required to be paid on repayment or redemption of that item;
- The distributions paid on that item.

4.4.1.11. For the purposes of 4.4.1.9. 2), the provisions governing the conversion to the basic own-fund item listed in points 4.3.1.2. 1) a) or b) shall specify either of the following:

- The rate of conversion and a limit on the permitted amount of conversion;
- A range within which the instruments will convert into the basic own funds item listed in 4.3.1.2. 1) a) or b).

Duration

4.4.1.12. To be eligible as Tier 1, a basic own-fund item:

1) In the case of items referred to in points 4.3.1.2. 1) a) or b), is undated or, where the insurer or reinsurer has a fixed maturity, is of the same maturity as the insurer;
2) In the case of items referred to in points 4.3.1.2. 1) c), e) and 2), is undated and the first contractual opportunity to repay or redeem the basic own-fund item does not occur before five years from the date of issuance;

4.4.1.13. For the purposes of 4.4.1.12. 2) the item must not include a contractual term providing for a call option prior to five years from the date of issuance, including call options predicated on unforeseen changes, outside the control of the insurer, related to the treatment of an own fund item. Subject to all relevant criteria being met and to prior supervisory approval, arrangements predicated on unforeseen changes, which are outside the control of the insurer, that would give rise to transactions or arrangements which are not deemed to be repayment or redemption shall be permitted.

Repayment or redemption and absence of incentives to redeem

4.4.1.14. To be eligible as Tier 1, a basic own-fund item referred to in 4.3.1.2. 1) c), e) and 2) may only allow for repayment or redemption of that item between 5 and 10 years after the date of issuance where the insurer's Solvency Capital Requirement is exceeded by an appropriate margin taking into account the solvency position of the insurer including the insurer's medium-term capital management plan.

4.4.1.15. To be eligible as Tier 1, the basic own-fund item, in the case of items referred to in points 4.3.1.2. 1) a), b), c), e) or 2), is only repayable or redeemable at the option of the insurer or reinsurer and the repayment or redemption of the basic own-fund item is subject to prior supervisory approval.

4.4.1.16. For the purpose of 4.4.1.15:

1) The terms of the item or any associated arrangement must not provide for any incentive to redeem as set out in 4.9.1.2.

2) Redemption is permissible at the discretion of the insurer, but the insurer must do nothing to create an expectation at issuance that the item will be redeemed or cancelled nor must the contractual terms governing the own-fund item contain any term which might give rise to such an expectation, other than the inclusion of a contractual maturity, for a dated instrument, which is itself suspended on non-compliance with the Solvency Capital Requirement.
3) The item shall be treated as repaid or redeemed with effect from the date of notice to holders of the item or the date of supervisory approval, if no notice is required, and shall be excluded from own funds as at that date.

4.4.1.17. To be eligible as Tier 1, a basic own-fund item, in the case of items referred to in 4.3.1.2. 1) a), b), c), e) or 2), must not include any incentives to repay or redeem that item that increases the likelihood that an insurer or reinsurer will repay or redeem that basic own-fund item where it has the option to do so.

Suspension of repayment or redemption in case of non-compliance with the SCR

4.4.1.18. To be eligible as Tier 1, the basic own-fund item, in the case of items referred to in 4.3.1.2. 1) a), b), c), e) or 2), must provide for the ability to suspend repayment or redemption of that item in the event that there is non-compliance with the Solvency Capital Requirement or repayment or redemption would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the repayment or redemption would not lead to non-compliance with the Solvency Capital Requirement.

4.4.1.19. Notwithstanding 4.4.1.18, to be eligible as Tier 1, a basic own-fund item may only allow for repayment or redemption of that item in the event that there is non-compliance with the Solvency Capital Requirement or repayment or redemption would lead to such non-compliance, where the following conditions are met:

1) The FSA has exceptionally waived the suspension of repayment or redemption of that item;
2) The item is exchanged for or converted into another Tier 1 own-fund item of at least the same quality;
3) The Minimum Capital Requirement is complied with after the repayment or redemption.

Cancellation of distributions in case of non-compliance with the SCR

4.4.1.20. To be eligible as Tier 1:

1) In the case of items referred to in 4.3.1.2. 1) a) or b), either the legal or contractual arrangements governing the item or Manx legislation allow for the distributions in relation to that item to be cancelled in the event that there is non-compliance with the Solvency Capital Requirement or the distribution would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the distribution would not lead to non-compliance with the Solvency Capital Requirement;

2) In the case of items referred to in 4.3.1.2. 1) c), e) and 2) the terms of the contractual arrangement governing the own-fund item provide for the cancellation of distributions in relation to that item in the event that there is non-compliance with the Solvency Capital Requirement or the distribution would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the distribution would not lead to non-compliance with the Solvency Capital Requirement.

4.4.1.21. Notwithstanding 4.4.1.20, the basic own-fund item may only allow for a distribution to be made in the event that there is non-compliance with the Solvency Capital Requirement or the distribution on a basic-own-fund item would lead to such non-compliance, where the following conditions are met:

1) The FSA has exceptionally waived the cancellation of distributions;
2) The distribution does not further weaken the solvency position of the insurer or reinsurer;
3) The Minimum Capital Requirement is complied with after the distribution is made.

4.4.1.22. For the purpose of 4.4.1.21:

1) An alternative coupon satisfaction mechanism may only be included in the terms of the contractual arrangement governing the own-fund item where the mechanism provides for distributions to be settled through the issue of ordinary share capital;
2) An alternative coupon satisfaction mechanism may only be included if it achieves the same economic result as the cancellation of the distribution and there is no decrease in own funds;
3) Any distributions under the alternative coupon satisfaction mechanism must occur as soon as permitted using unissued ordinary share capital which has already been approved or authorised under Manx law or under the statutes of the insurer;
4) The alternative coupon satisfaction mechanism may not use own shares held as a result of repurchase; and
5) The terms of the contractual arrangement governing the own-fund item:
   a) Provide for the operation of any alternative coupon satisfaction mechanism to be subject to an exceptional waiver from the FSA under 4.4.1.21. 1) on each occasion that coupon cancellation is required;
   b) State that the waiver is intended to operate on an exceptional basis, and
   c) Do not oblige the insurer to operate the alternative coupon satisfaction mechanism.

Full discretion over distributions

4.4.1.23. Notwithstanding 4.4.1.20, a basic own-fund item shall be eligible as Tier 1 capital, in the case of items referred to in 4.3.1.2. 1) a), b), c), e) or 2), if it provides the insurer with full flexibility over the distributions on the basic own-fund item.

4.4.1.24. Full flexibility over the distributions, in the case of basic own-fund items referred to in 4.3.1.2. 1) a) or b), shall mean that:

1) There is no preferential distribution treatment regarding the order of distribution payments and the terms of the contractual arrangement governing the own-fund item do not provide preferential rights to the payment of distributions;
2) Distributions are paid out of distributable items;
3) The level of distributions is not determined on the basis of the amount for which the own-fund item was purchased at issuance and there is no cap or other restrictions on the maximum level of distribution;
4) There is no obligation for an insurer or reinsurer to make distributions;
5) Non-payment of distributions does not constitute an event of default of the insurer or reinsurer;
6) The cancellation of distributions imposes no restrictions on the insurer.

4.4.1.25. Full flexibility over the distributions, in the case of basic own-fund items referred to in 4.3.1.2. 1) c), e) and 2), shall mean that:

1) Distributions are paid out of distributable items;
2) Insurers and reinsurers have full discretion at all times to cancel distributions in relation to the own-fund item for an unlimited period and on a non-cumulative basis and the institution may use the cancelled payments without restriction to meet its obligations as they fall due;
3) There is no obligation to substitute the distribution by a payment in any other form;
4) There is no obligation to make distributions in the event of a distribution being made on another own-fund item;
5) Non-payment of distributions does not constitute an event of default of the insurer or reinsurer;
6) The cancellation of distributions imposes no restrictions on the insurer or reinsurer.

4.4.1.26. Full flexibility over the distributions shall also mean that the terms of the contractual arrangement governing the own-fund item:

1) Do not require distributions to be made on the items in the event of a distribution being made on any other security relating to an own-fund item issued by the insurer;
2) Do not require the payment of distributions to be cancelled or prevented on any other item of the insurer in the event that no distribution is made in respect of the item; and
3) Do not provide for the linking of the payment of distributions to any other event or transaction which has the same economic effect as in 1) or 2) above.

Absence of encumbrances

4.4.1.27. To be eligible as Tier 1, a basic own-fund item must be free from encumbrances and is not connected with any other transaction, which when considered with the basic own-fund item, could result in that basic own-fund item not satisfying the requirements set out in 4.4.

Exchange or conversion and repayment

4.4.1.28. For the purposes of section 4.4, the exchange or conversion of a basic own-fund item into another Tier 1 basic own-fund item or the repayment or redemption of a Tier 1 own-fund item out of the proceeds of a new basic own-fund item of at least the same quality shall not be deemed to be a repayment or redemption, provided that the exchange, conversion, repayment or redemption is subject to the approval of the FSA.

4.4.1.29. To be eligible as Tier 1, the nominal or principal amount of the basic own-fund item shall absorb losses at the trigger event defined in 4.4.1.30. Loss absorbency resulting from the cancellation of, or reduction in, distributions shall not be deemed to be sufficient to meet the requirement in 4.4.1.9 for a principal loss absorbency mechanism.

4.4.1.30. The trigger event referred to in 4.4.1.9 is significant non-compliance with the Solvency Capital Requirement. Non-compliance with the Solvency Capital Requirement is significant where at least one of the following conditions is met:

1) The amount of own-fund items eligible to cover the Solvency Capital Requirement is equal to or less than the 75% of the Solvency Capital Requirement;
2) The amount of own-fund items eligible to cover the Minimum Capital Requirement is equal to or less than Minimum Capital Requirement;
3) Compliance with the Solvency Capital Requirement is not re-established within a period of three months of the date when non-compliance was observed.

4.4.1.31. Insurers may specify in the provisions governing the instrument one or more trigger events in addition to the events referred to in points 4.4.1.30. 1) to 3).

4.4.1.32. For the purposes of 4.4.1.7, 4.4.1.18 and 4.4.1.20, references to the Solvency Capital Requirement shall be read as references to the Minimum Capital Requirement in the event that non-compliance with the Minimum Capital Requirement occurs before non-compliance with the Solvency Capital Requirement.

4.4.1.33. For the purposes of 4.4.1.23 and in the case of an item referred to in 4.3.1.2. 1) a) and b),

1) The level of distribution may not in any way be linked to the amount paid in at issuance and is not subject to a contractual cap (except to the extent that an insurer is unable to pay distributions that exceed the level of distributable items);

2) There are no preferential distributions of income or capital, including in relation to other items referred to in 4.3.1.2. 1) a) and b), and the terms governing the instruments do not provide preferential rights for the payment of distributions;
3) Distributable items shall comprise retained earnings, including profit for the year ended prior to the year of distribution, and distributable reserves as defined under Manx law or by the statutes of the insurer, reduced by the deduction of any interim net loss for the current financial year from retained earnings;
4) The amount of distributable items shall be determined on the basis of the individual accounts of the insurer and not on the basis of consolidated accounts;
5) Where Manx law imposes a restriction on an insurer's distributable items by reference to consolidated accounts, this restriction shall be reflected in the determination of the insurer's distributable items;
6) The terms of the contractual arrangements governing the own-fund item and any terms in any other own-fund item shall not pre-define the level or amount of distribution to be made on the item referred to in 4.3.1.2. 1) a) and b), including pre-defining the distribution at zero;
7) The terms of the contractual arrangement governing the own-fund item do not require a distribution to be made in the event of a distribution being made on any other item issued by the insurer.

Principal loss absorbency mechanisms

4.4.1.34. For the purposes of 4.4.1.9:

1) The loss absorbency mechanism to be used, including the trigger point, is clearly defined in the terms of the contractual arrangement governing the own-fund item and legally certain;
2) The loss absorbency mechanism achieves effective loss absorbency at the point of the trigger, without delay and regardless of any requirement to notify holders of the item;
3) Any write-down mechanism that does not allow for future write-up provides that the amounts written down in accordance with 4.4.1.9 cannot be restored;
4) Any write-down mechanism that allows for a future write-up of the nominal or principal amount provides that:
   a) Write-up is permitted only after the insurer has achieved compliance with the Solvency Capital Requirement;
   b) Write-up is not activated by reference to own-fund items issued or increased in order to restore compliance with the Solvency Capital Requirement;

c) Write-up only occurs on the basis of profits which contribute to distributable items made subsequent to the restoration of compliance with the Solvency Capital Requirement in a manner that does not undermine the loss absorbency intended by 4.4.1.9.

5) Any conversion mechanism provides that:

a) The basis on which the security relating to an own-fund item converts into ordinary share capital on significant non-compliance with the Solvency Capital Requirement is specified clearly in the terms of the contractual arrangement governing the security;

b) The conversion terms do not fully compensate the nominal amount of a holding by allowing an uncapped conversion rate in the event of falls in the share price;

c) The maximum number of shares the holder of the security might receive shall be certain at the time of issuance of the security;

d) The conversion will result in a situation where losses are absorbed on a going concern basis and the basic own-fund items that arise as a result of the conversion do not hinder re-capitalisation;

e) The choice of a conversion rate takes into account the impact on the scope for and timing of any future recapitalisation; and

f) Shares are available to be issued, so sufficient shares have already been authorised in accordance with Manx law or the statutes of the insurer.

4.4.1.35. For the purposes of 4.4.1.6 and in the case of an item referred to in 4.3.1.2. 1) a), b), c), e) or 2), an item is only immediately available to absorb losses if the item is paid in and there are no conditions or contingences in respect of its ability to absorb losses.

4.5. Tier 2 Basic Own Funds

4.5.1.1. Basic own-fund items shall be classified in Tier 2 where they are listed in 4.5.1.2 and display the features set out in 4.6.

4.5.1.2. The following basic own-fund items shall be classified in Tier 2, where those items display the features set out in section 4.6.

1) the part of the excess of assets over liabilities, valued in accordance with Section 1 of this Technical Specification, comprising the following items:

a) Ordinary share capital and the related share premium account;

b) Initial funds, members' contributions or the equivalent basic own-fund item for mutual and mutual-type insurers;

c) Subordinated mutual member accounts;

d) Preference shares and the related share premium account;

2) Subordinated liabilities valued in accordance with Section 1 of this Technical Specification.

Time period between call and payment for unpaid share capital or members' contributions

4.5.1.3. For the purposes of 4.5.1.2. 1)a), 1)b) and 1)d):

1) Unless specified under Manx law, the time period between calling on shareholders or members to pay and the item becoming paid in shall not be longer than three months. During this time the own funds are considered called up but not paid in and are classified as Tier 2 basic own funds provided that all other relevant criteria are met.
2) For items which are called up but not paid in, the shareholder or member of the item shall still be obliged to pay the outstanding amount in the event of the insurer becoming insolvent or entering into winding-up procedures prior to payment on called up items being received, and the amount shall be available to absorb losses.

4.5.1.4. The basic own-fund items listed in 4.5.1.2 shall display the features set out in 4.6 in order to be classified as Tier 2.

4.6. Features determining classification as Tier 2

Subordination

4.6.1.1. To be eligible as Tier 2, the basic own-fund item must rank after the claims of all policyholders and beneficiaries and non-subordinated creditors.

Absence of features causing or accelerating insolvency

4.6.1.2. To be eligible as Tier 2, the basic own-fund item must not include features which may cause the insolvency of the insurer or reinsurer or may accelerate the process of the insurer becoming insolvent.

Duration

4.6.1.3. To be eligible as Tier 2, the basic own-fund item is undated or has an original maturity of at least 10 years; the first contractual opportunity to repay or redeem the basic own-fund item does not occur before 5 years from the date of issuance.

4.6.1.4. For the purpose of 4.6.1.3, the item does not include a contractual term providing for a call option prior to 5 years from the date of issuance, including call options predicated on unforeseen changes, outside the control of the insurer, related to the treatment of an own-fund item. Subject to all relevant criteria being met and to prior supervisory approval, arrangements predicated on unforeseen changes which are outside the control of the insurer, that would give rise to transactions or arrangements which are not deemed to be repayment or redemption shall be permitted.

Discretion on repayment or redemption and incentives to redeem

4.6.1.5. To be eligible as Tier 2, the basic own-fund item must be only repayable or redeemable at the option of the insurer or reinsurer and the repayment or redemption of the basic own-fund item is subject to prior supervisory approval.

4.6.1.6. For the purpose of 4.6.1.5, the terms of the item or any associated arrangement may include limited incentives to redeem as set out in 4.9.1.2 to 4.9.1.5. The item shall be treated as repaid or redeemed with effect from the date of notice to holders of the item or the date of supervisory approval, if no notice is required, and shall be excluded from own funds as at that date.

4.6.1.7. The basic own-fund item may include limited incentives to repay or redeem that basic own-fund item, provided that these do not occur before 10 years from the date of issuance.

Suspension of repayment or redemption in case of non-compliance with the SCR

4.6.1.8. To be eligible as Tier 2, the basic own-fund item should provide for the suspension of repayment or redemption of that item in the event that there is non-compliance with the Solvency Capital Requirement or repayment or redemption would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the repayment or redemption would not lead to non-compliance with the Solvency Capital Requirement.

4.6.1.9. Notwithstanding 4.6.1.8, the basic own-fund item may only allow for the repayment or redemption of that item in the event that there is non-compliance with the Solvency Capital Requirement or repayment or redemption would lead to such non-compliance, where the following conditions are met:

1) The FSA has exceptionally waived the suspension of repayment or redemption of that item;
2) The item is exchanged for or converted into another Tier 1 or Tier 2 basic own-fund item of at least the same quality;
3) The Minimum Capital Requirement is complied with after the repayment or redemption.

Deferral of distributions in case of non-compliance with the SCR

4.6.1.10. To be eligible as Tier 2, the basic own-fund item:

1) In the case of items referred to in 4.5.1.2. 1)a) and 1)b), either the legal or contractual arrangements governing the item or Manx legislation allow for the distributions in relation to that item to be deferred in the event that there is non-compliance with the Solvency Capital Requirement or the distribution would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the distribution would not lead to non-compliance with the Solvency Capital Requirement;

2) In the case of items referred to in 4.5.1.2. 1)c), 1)d) and 2) the terms of the contractual arrangement governing the own-fund item provide for the distributions in relation to that item to be deferred in the event that there is non-compliance with the Solvency Capital Requirement or the distribution would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the distribution would not lead to non-compliance with the Solvency Capital Requirement.

4.6.1.11. Notwithstanding 4.6.1.10, the basic own-fund item may only allow for a distribution to be made in the event that there is non-compliance with the Solvency Capital Requirement or the distribution on a basic-own-fund item would lead to such non-compliance, where the following conditions are met:

1) The FSA has exceptionally waived the deferral of distributions;
2) The payment does not further weaken the solvency position of the insurer or reinsurer;
3) The Minimum Capital Requirement is complied with after the distribution is made.

Absence of encumbrances

4.6.1.12. To be eligible as Tier 2, the basic own-fund item must be free from encumbrances and shall not be connected with any other transaction, which when considered with the basic own-fund item, could result in that basic own-fund item not satisfying the requirements set out in 4.6.

Grading down

4.6.1.13. To be eligible as Tier 2, the basic own-fund item may display the features set out in section 4.4 that are relevant for basic own-fund items referred to in points 4.3.1.2. 1) c), e) and 2), but be in excess of the limit set out in 4.13.1.3.

Exchange or conversion and repayment

4.6.1.14. For the purposes of this section, the exchange or conversion of a basic own-fund item into another Tier 1 or Tier 2 basic own-fund item or the repayment or redemption of a Tier 2 basic own-fund item out of the proceeds of a new basic own-fund item of at least the same quality shall not be deemed to be a repayment or redemption, provided that the exchange, conversion, repayment or redemption is subject to the approval of the FSA.

4.6.1.15. For the purposes of 4.6.1.8 and 4.6.1.10, references to the Solvency Capital Requirement shall be read as references to the Minimum Capital Requirement in the event that non-compliance with the Minimum Capital Requirement occurs before non-compliance with the Solvency Capital Requirement.

4.6.1.16. For the purposes of 4.6.1.2, 4.4.1.3 shall apply to Tier 2 basic own-fund items in the same way it does to items referred to in 4.3.1.2. 1) c), e) and 2).

4.6.1.17. For the purposes of 4.6.1.10, the terms of the contractual arrangement governing the own-fund item must be such that the operation of the deferral overrides the requirement to redeem at contractual maturity.

4.7. Tier 3 Basic own funds

List of own-fund items

4.7.1.1. Any basic own-fund items which do not fall under 4.3.1.2 or 4.5.1.2 shall be classified in Tier 3.

4.7.1.2. The following basic own-fund items shall be classified in Tier 3, where those items display the features set out in 4.8:

1) The part of the excess of assets over liabilities, valued in accordance with Section 1 of this Technical Specification, comprising the following items:
   a) Subordinated mutual member accounts;
   b) Preference shares and the related share premium account;
   c) An amount equal to the value of net deferred tax assets;
2) Subordinated liabilities valued in accordance with Section 1 of this Technical Specification.

4.8. Features determining classification as Tier 3

4.8.1.1. The basic own-fund items listed in 4.7.1.2 shall display the following features in order to be classified as Tier 3.

Subordination

4.8.1.2. To be eligible as Tier 3, the basic own-fund item, in the case of items referred to in 4.7.1.2. 1) a), b) and 2), must rank after the claims of all policyholders and beneficiaries and non-subordinated creditors.

Absence of features causing or accelerating insolvency

4.8.1.3. To be eligible as Tier 3, the basic own-fund item must not include features which may cause the insolvency of the insurer or may accelerate the process of the insurer becoming insolvent.

Duration

4.8.1.4. To be eligible as Tier 3, the basic own-fund item, in the case of items referred to in 4.7.1.2. 1) a), b) and 2), is undated or has an original maturity of at least 5 years, where the maturity date is the first contractual opportunity to repay or redeem the basic own-fund item.

4.8.1.5. For the purpose of 4.8.1.4, the item shall not include a contractual term providing for a call option prior to 5 years from the date of issuance, including call options predicated on unforeseen changes, outside the control of the insurer, related to the treatment of an own-fund item. Subject to all relevant criteria being met and to prior supervisory approval, arrangements predicated on unforeseen changes which are outside the control of the insurer, that would give rise to transactions or arrangements which are not deemed to be repayment or redemption shall be permitted.

Repayment or redemption and limited incentives to redeem

4.8.1.6. To be eligible as Tier 3, the basic own-fund item, in the case of items referred to in 4.7.1.2. 1) a), b) and 2), is only repayable or redeemable at the option of the insurer or reinsurer and the repayment or redemption of the basic own-fund item is subject to prior supervisory approval.

4.8.1.7. For the purpose of 4.8.1.6, the terms of the item or any associated arrangement may include limited incentives to redeem as set out in 4.9.1.2 to 4.9.1.5.The item shall be treated as repaid or redeemed with effect from the date of notice to holders of the item or the date of supervisory approval, if no notice is required, and shall be excluded from own funds as at that date.

4.8.1.8. To be eligible as Tier 3, the basic own-fund item, in the case of items referred to in 4.7.1.2. 1) a), b) and 2), may include limited incentives to repay or redeem that basic own-fund item.

Suspension of repayment or redemption in case of non-compliance with the SCR

4.8.1.9. To be eligible as Tier 3, the basic own-fund item, in the case of items referred to in 4.7.1.2. 1) a), b) and 2), shall provide for the suspension of repayment or redemption in the event that there is non-compliance with the Solvency Capital Requirement or repayment or redemption would lead to such non-compliance until the insurer complies with the Solvency Capital Requirement and the repayment or redemption would not lead to non-compliance with the Solvency Capital Requirement.

4.8.1.10. For the purpose of 4.8.1.9, the terms of the contractual arrangement governing the own-fund item shall include provision for the suspension of the repayment or redemption of the item at any point up until the date of repayment or redemption in the event of non-compliance with the Solvency Capital Requirement or if the repayment or redemption would result in such non-compliance.

4.8.1.11. Notwithstanding 4.8.1.9, the basic own-fund item may only allow for the repayment or redemption of that item in the event that there is non-compliance with the Solvency Capital Requirement or repayment or redemption would lead to such non-compliance, where the following conditions are met:

1) The FSA has exceptionally waived the suspension of repayment or redemption of that item;
2) The item is exchanged for or converted into another Tier 1, Tier 2 basic own-fund item or Tier 3 basic own-fund item of at least the same quality;
3) The Minimum Capital Requirement is complied with after the repayment or redemption.

Deferral of distributions in case of non-compliance with the SCR

4.8.1.12. To be eligible as Tier 3, the basic own-fund item, in the case of items referred to in 4.7.1.2. 1) a), b) and 2), provides for the deferral of distributions in the event that there is non-compliance with the Minimum Capital Requirement or the distribution would lead to such non-compliance until the insurer complies with the Minimum Capital Requirement and the distribution would not lead to non-compliance with the Minimum Capital Requirement.

4.8.1.13. For the purposes of 4.8.1.12, the terms of the contractual arrangement governing the own-fund item shall be such that the operation of the deferral overrides the requirement to redeem at contractual maturity.

Absence of encumbrances

4.8.1.14. To be eligible as Tier 3, the basic own-fund item shall be free from encumbrances and is not connected with any other transaction, which when considered with the subordinated liability, could undermine the features that the item is required to possess in accordance with 4.8.

Exchange or conversion and repayment

4.8.1.15. For the purposes of this section, the exchange or conversion of a basic own-fund item into another Tier 1, Tier 2 or Tier 3 basic own-fund item or the repayment or redemption of a Tier 3 basic own-fund item out of the proceeds of a new basic own-fund item of at least the same quality shall not be deemed to be a repayment or redemption, provided that the exchange, conversion, repayment or redemption is subject to the approval of the FSA.

4.8.1.16. For the purpose of 4.8.1.11, references to the Solvency Capital Requirement shall be read as references to the Minimum Capital Requirement in the event that non-compliance with the Minimum Capital Requirement occurs before non-compliance with the Solvency Capital Requirement.

4.8.1.17. For the purposes of 4.8.1.3, 4.4.1.3 shall apply to Tier 3 basic own-fund items in the same way it does to items referred to paragraph 4.3.1.2. 1) c), e) and 2).

4.9. Encumbrance and Incentives to Redeem

Encumbrances

4.9.1.1. For the purposes of 4.4.1.27, 4.6.1.12 and 4.8.1.14:

1) The assessment as to whether an own-funds item is encumbered shall be made on the basis of the economic effect of the encumbrance and the nature of the item, applying the principle of substance over form.
2) Encumbrances shall include, but shall not be limited to:
   a) Rights of set off;
   b) Restrictions;
   c) Charges or guarantees;
   d) A holding by the insurer of its own own-fund items;

e) The effect of a transaction or a group of connected transactions which have the same effect as any of (i) to (iv) above, and

f) The effect of a transaction or a group of connected transactions which otherwise undermine an item's ability to meet the criteria for classification as an own-fund item.

3) An encumbrance arising from a transaction or group of transactions which is equivalent to the holding of own shares includes the case where an insurer holds its own Tier 1, Tier 2 or Tier 3 items.

4) Where the encumbrance is equivalent to the holding of own shares, the insurer shall reduce the reconciliation reserve by the amount of the encumbered item.

5) If an item is encumbered to the extent that it no longer satisfies the criteria for classification, the item shall not be classified as own funds.

6) If an item is encumbered but when the effect of the encumbrance is taken into account, it meets the criteria for a lower tier of own funds, the item shall be classified on the basis of the combined characteristics of the item and the encumbrance.

Incentives to redeem

4.9.1.2. For the purposes of 4.4.1.15, 4.6.1.5 and 4.8.1.6, insurers shall consider incentives to redeem that are not limited as not permitted in any tier.

4.9.1.3. Incentives to redeem that are not limited include:

1) Principal stock settlement combined with a call option;

2) Mandatory conversion combined with a call option;

3) A change in the distribution structure from a fixed to a floating rate combined with a call option;

4) An increase in the principal amount which is applicable subsequent to the call date, combined with a call option;

5) Any other provision or arrangement which might reasonably be regarded as providing an economic basis for the likely redemption of the item.

4.9.1.4. In the case of items referred to in 4.5.1.2, insurers shall be able to include limited incentives to redeem if they do not occur before 10 years after the issue date of the item. In the case of items referred to in 4.7.1.2, insurers shall be able to include limited incentives if they do not occur before 5 years after the issue date of the item.

4.9.1.5. Incentives to redeem in the form of a step-up associated with a call option are limited if the step-up takes the form of a single increase in the coupon rate and results in an increase over the initial rate that is no greater than the higher of the following two amounts:

1) 100 basis points, less the swap spread between the initial index basis and the stepped-up index basis; or

2) 50% of the initial credit spread, less the swap spread between the initial index basis and the stepped-up index basis.

4.10. Tier 2 Ancillary own funds

4.10.1.1. Ancillary own funds are items of capital other than basic own-funds which can be called up to absorb losses. They can comprise the following items to the extent they are not basic own-funds items:

1) Unpaid share capital or initial fund that has not been called up;

2) Letters of credit or guarantees;

3) Any other legally binding commitments received by insurers and reinsurers.

4.10.1.2. Insurers are requested to disclose the amount of any such Tier 2 Ancillary own funds in their QIS return, for information purposes to assist the FSA with defining the Own Funds requirements in the final specification. Tier 2 Ancillary own funds should not at this stage be assumed to be eligible as own funds and should not be included in own funds for stress scenario purposes in calculating the SCR.

4.11. Tier 3 Ancillary own funds

4.11.1.1. For the purpose of the QIS, existing arrangements currently eligible to meet solvency requirements which would constitute ancillary own funds under the approach set out in this paper, but which would not be eligible as Tier 2 ancillary own funds because that item would not be classified in Tier 1 if it were called up and paid in may be classified as Tier 3 ancillary own funds.

4.11.1.2. Insurers are requested to disclose the amount of any such Tier 3 Ancillary own funds in their QIS return, for information purposes to assist the FSA with defining the Own Funds requirements in the final specification. Tier 3 Ancillary own funds should not at this stage be assumed to be eligible as own funds and should not be included in own funds for stress scenario purposes in calculating the SCR.

4.12. Items not on the list

4.12.1.1. Where a basic own-fund item is not covered by the lists set out in articles 4.3.1.2, 4.5.1.2, 4.7.1.2 but (a) can be used to meet the available solvency margin in accordance to existing laws, regulations and administrative provisions, and (b) displays the features set out in section 4.4, 4.6 or 4.8, it may perhaps in future be considered as basic own funds. Insurers are requested to disclose the amount of any such own fund items in their QIS return, for information purposes to assist the FSA with defining the Own Funds requirements in the final specification. Any such items should not at this stage be assumed to be eligible as own funds and should not be included in own funds for stress scenario purposes in calculating the SCR.

4.13. Eligibility of Own Funds

4.13.1.1. As far as compliance with the Solvency Capital Requirement is concerned:

1) The eligible amount of Tier 1 items shall be at least 50% of the Solvency Capital Requirement;
2) The eligible amount of Tier 3 items shall be less than 15 % of the Solvency Capital Requirement;
3) The sum of the eligible amounts of Tier 2 and Tier 3 items shall not exceed 50 % of the Solvency Capital Requirement.

4.13.1.2. As far as compliance with the Minimum Capital Requirements is concerned, the eligible amount of Tier 1 items shall be at least 80 % of the Minimum Capital Requirement.

4.13.1.3. Within the limits referred to 4.13.1.1 1) and 4.13.1.2, the sum of the following basic own-fund items (restricted Tier 1 items) shall make up less than 20 % of the total amount of Tier 1 items

1) Items referred to in 4.3.1.2. 1) c);
2) Items referred to in 4.3.1.2. 1) e);
3) Items referred to in 4.3.1.2. 2).

Appendix A Principles for recognising risk mitigation techniques in the SCR standard formula

Principle 1: Economic effect over legal form

A.1. Risk mitigation techniques should be recognised and treated consistently, regardless of their legal form or accounting treatment, provided that their economic or legal features meet the requirements for such recognition.

A.2. Where risk mitigation techniques are recognised in the SCR calculation, any material new risks shall be identified, quantified and included within the SCR. Where the risk mitigation technique actually increases risk, then the SCR should be increased.

A.3. The calculation of the SCR should recognise risk mitigation techniques in such a way that there is no double counting of mitigation effects.

Principle 2: Legal certainty, effectiveness and enforceability

A.4. The transfer of risk from the insurer to the third party shall be effective in all circumstances in which the insurer may wish to rely upon the transfer. Examples of factors which the insurer shall take into account in assessing whether the transaction effectively transfers risk and the extent of that transfer include:

- Whether the relevant documentation reflects the economic substance of the transaction;
- Whether the extent of the risk transfer is clearly defined and beyond dispute;
- Whether the transaction contains any terms or conditions the fulfilment of which is outside the direct control of the insurer or reinsurer. Such terms or conditions may include those which:
  - Would allow the third party unilaterally to cancel the transaction, except for the non-payment of monies due from the insurer to the third party under the contract;
  - Would increase the effective cost of the transaction to the insurer in response to an increased likelihood of the third party experiencing losses under the transaction;
  - Would oblige the insurer to alter the risk that had been transferred with the purpose of reducing the likelihood of the third party experiencing losses under the transaction;
  - Would allow for the termination of the transaction due to an increased likelihood of the third party experiencing losses under the transaction;
  - Could prevent the third party from being obliged to pay out in a timely manner any monies due under the transaction; or
  - Could allow the maturity of the transaction to be reduced.

A.5. An insurer shall also take into account circumstances in which the benefit to the insurer of the transfer of risk could be undermined. For instance, where the insurer, with a view to reducing potential or actual losses to third parties, provides support to the transaction, including support beyond its contractual obligations.

A.6. In determining whether there is a transfer of risk, the entire contract shall be considered. Further, where the contract is one of several related contracts the entire chain of contracts, including contracts between third parties, shall be considered in determining whether there is a transfer of risk. In the case of reinsurance, the entire legal relationship between the cedant and reinsurer shall be taken into account in this determination.

A.7. The insurer shall take all appropriate steps, for example a sufficient legal review, to ensure and confirm the effectiveness and ongoing enforceability of the risk mitigation arrangement and to address related risks. 'Ongoing enforceability' refers to any legal or practical constraint that may impede the insurer or reinsurer from receiving the expected protection. In the case of financial risk mitigation, the allowance in the SCR of the 'counterparty default risk' derived from the 'financial risk mitigation technique' does not preclude the necessity of satisfying the 'ongoing enforceability'.

A.8. In the case of financial risk mitigation, instruments used to provide the risk mitigation together with the action and steps taken and procedures and policies implemented by the insurer shall be such as to result in risk mitigation arrangements which are legally effective and enforceable in all jurisdictions relevant to the arrangement and, where appropriate, relevant to the hedged asset or liability.

A.9. Procedures and processes not materialised in already existing financial contracts providing protection at the date of reference of the solvency assessment, shall not be allowed to reduce the calculation of the SCR with the standard formula.

Principle 3: Liquidity and certainty of value

A.10. To be eligible for recognition, the risk mitigation techniques shall be valued in line with the principles laid down for valuation of assets and liabilities, other than technical provisions. This value shall be sufficiently reliable and appropriate to provide certainty as to the risk mitigation achieved.

A.11. Regarding the liquidity of the financial risk mitigation techniques, the following applies:

- The insurer should have written internal policy regarding the liquidity requirements that financial risk mitigation techniques should meet, according to The objectives of the insurer's risk management policy;
- financial risk mitigation techniques considered to reduce the SCR have to meet the liquidity requirements established by the insurer; and
- The liquidity requirements shall guarantee an appropriate coordination of the liquidity features of the hedged assets or liabilities, the liquidity of the financial risk mitigation technique, and the overall policy of the insurer regarding liquidity risk management.

Principle 4: Credit quality of the provider of risk mitigation

A.12. Providers of risk mitigation instruments should have an adequate credit quality to guarantee with appropriate certainty that the **insurer** will receive the protection in the cases specified by the contracting parties.

A.13. Credit quality should be assessed using objective techniques according to generally accepted practices.

A.14. The assessment of the credit quality of the provider of protection shall be based on a joint and overall assessment of all the features or contracts directly and explicitly linked to the financial risk mitigation technique. This assessment shall be carried out in a prudent manner, in order to avoid any overstatement of the credit quality.

A.15. The correlation between the values of the instruments relied upon for risk mitigation and the credit quality of their provider shall not be unduly adverse, i.e. it should not be materially positive (known in the banking sector as 'wrong way risk'). As an example, exposures in a company belonging to a group should not be mitigated with CDS provided by entities of the same group, since it is very likely that a failure of the group will lead to falls in the value of the exposure and simultaneous downgrade or failure of the provider of protection. This requirement does not refer to the systemic correlation existing between all financial markets as a whole in times of crisis.

Principle 5: Direct, explicit, irrevocable and unconditional features

A.16. Financial risk mitigating techniques can only reduce the capital requirements if:

- They provide the insurer with a direct claim on the protection provider;
- They contain an explicit reference to specific exposures or a pool of exposures, so that the extent of the cover is clearly defined and incontrovertible;
- They are not subject to any clause, the fulfilment of which is outside the direct control of the insurer, that would allow the protection provider to unilaterally cancel the cover or that would increase the effective cost of protection as a result of certain developments in the hedged exposure; and
- They are not subject to any clause outside the direct control of the insurer that could prevent the protection provider from its obligation to pay out in a timely manner in the event that a loss occurs on the underlying exposure

Appendix B Association of credit assessments with credit quality steps

B.1. The credit assessments of an External Credit Assessment Institution (ECAI) are to be associated with the following credit quality steps:

Credit quality step	Standard & Poor's/Fitch	Moody's
0	AAA	Aaa
1	AA	Aa
2	A	A
3	BBB	Baa
4	BB	Ba
5 -6	Lower than BB/ unrated	Lower than BB/ unrated

Appendix C Health Catastrophe Risk – geographical segmentation and risk factors for the mass accident risk scenario

Country *s*	r_s – ratio of persons affected by the mass accident in country *s*
Austria	0.30%
Belgium	0.25%
Bulgaria	0.30%
Croatia	0.40%
Cyprus	1.30%
Czech Republic	0.10%
Denmark	0.35%
Estonia	0.45%
Finland	0.35%
France	0.05%
Germany	0.05%
Greece	0.30%
Hungary	0.15%
Iceland	2.45%
Ireland	0.95%
Italy	0.05%
Latvia	0.20%
Lithuania	0.20%
Luxembourg	1.05%
Malta	2.15%
Netherlands	0.15%
Norway	0.25%
Poland	0.10%
Portugal	0.30%
Romania	0.15%
Slovakia	0.30%
Slovenia	0.40%
Spain	0.10%
Sweden	0.25%
Switzerland	0.25%
United Kingdom	0.05%