CONSULTATION PAPER

P003 - 2014

March 2014

Annex D
Technical Specifications For First Quantitative Impact Study ("QIS 1")

Monetary Authority of Singapore

TECHNICAL SPECIFICATIONS FOR FIRST QUANTITATIVE IMPACT STUDY ("QIS 1")

1. APPLICABILITY

1.1 QIS 1 has been designed to gather information and help evaluate the impact of the RBC 2 proposals. All insurers (with the exception of captives, Lloyd's insurers and marine mutuals) will be required to conduct QIS 1. This will allow the insurers to understand the impact of RBC 2 proposals on their capital positions, as well as give them an opportunity to highlight any implementation issues experienced in conducting QIS 1.

1.2 **Insurers are required to submit the QIS 1 results in the format set out in the attached Excel Workbook.** The forms are designed to capture the information needed for the analysis.


MAS_QIS1_v1.0.xlsx

Applicable for Matching Adjustment:


MAS_Matching Adjustment_v1.0.xls

1.3 **The projections under QIS 1 are to be based on the valuation date of 31 December 2013**. All amounts are to be shown in thousands of Singapore dollars (SGD).

1.4 Insurers are required to submit the results based on the following scenarios:

- **Scenario 1** assumes that all RBC 2 proposals in the consultation paper are incorporated with the exception of the Matching Adjustment;
- **Scenario 2** assumes that all RBC 2 proposals in the consultation paper are incorporated with the exception of the Matching Adjustment. In addition, insurers should assume that there is no LTRFDR, and that the 30-year SGS yield is used for durations 30 years and beyond;
- **Scenario 3** assumes that all RBC 2 proposals in the consultation paper are incorporated, including the Matching Adjustment ("MA") for life business if the criteria set out in the MA proposal can be satisfied.

1.5 **Separate Excel workbooks are to be completed for each scenario**. A summary of the scenarios can be found below:

	Scenario 1	Scenario 2	Scenario 3
Relevant for	All insurers	All insurers except where insurer does not need to discount its liabilities (refer to paragraph 3.20 of the consultation paper)	Insurers writing participating and/or non-participating business only
Discount rate to be used for durations 30 years and above	Refer to paragraph 2.3 of this document	Refer to paragraph 2.4 of this document	Refer to paragraph 2.3 of this document
Matching Adjustment Tested?	No	No	Yes
Applicable Excel Workbook	MAS_QIS_v1.0.xls	MAS_QIS_v1.0.xls	MAS_QIS_v1.0.xls MAS_Matching Adjutsment _v1.0.xls

1.6 Locally owned, locally incorporated reinsurers are to assume that RBC 2 will be applied immediately on its offshore insurance funds for the purpose of QIS. Foreign-owned locally incorporated reinsurers will be subject to the current simplified solvency requirement, whilst reinsurance branches will be exempt from solvency requirements for the offshore insurance funds[1].

1.7 Completed Excel workbook(s) should be submitted to MAS no later than **30 May 2014, with the exception of results for Scenario 3, where insurers have more time and can submit their results by 30 June 2014**. Insurers are strongly encouraged to send all QIS-related queries to QIS_1@mas.gov.sg**.**

1.8 **The Excel workbooks should be submitted by the insurer via email attachment to the insurer's liaison officer in MAS, using AES 256 encryption of higher.** The insurers should deliver the corresponding password of minimum 12 characters in length or encryption key via a separate transmission channel (e.g. telephone) to MAS. MAS uses WinZip12 AES 256 encryption to protect such information.

[1] Proposals 40, 41 and 42 of the consultation paper.

2. VALUATION OF ASSETS AND LIABILITIES

2.1 Unless otherwise specified in this document, valuation of all assets and liabilities should be done in accordance with the Insurance (Valuation and Capital) Regulations 2004 for the purpose of the QIS.

Determination of Risk-Free Discount Rate

2.2 When valuing liabilities denominated in Singapore dollars ("SGD denominated liabilities") on or after 31 Dec 2013, the "risk-free discount rate" is to be computed as follows:

(a) Where the duration of a liability is 20 years or less, the market yield of the SGS of a matching duration as at the valuation date;

(b) Where the duration of a liability is more than 20 years but less than 30 years, a yield that is interpolated from the market yield of the 20-year SGS and the discount rate used for liabilities with durations of 30 years and above, as calculated in (c); and

(c) Where the duration of a liability is 30 years or more, use the following discount rate as described under paragraph 2.3 or 2.4, depending on the scenario.

2.3 For **Scenarios 1 and 3**, the discount rate to be used for liabilities with durations of 30 years and above, is calculated as:

X% of A+ Y% of B

where A is based on the existing LTRFDR[2], computed as follows -

(a) Compute the average daily closing yield of the 15-year SGS since inception;

(b) Compute the average daily yield differential between the 15-year and 20-year SGS since the inception of the 20-year SGS;

(c) Derive an estimated long-term yield by adding the values obtained under subparagraphs (a) and (b);

(d) Compute the prevailing average daily closing yield of the 20-year SGS over the past 6-month period;

(e) Allocate 90% weight to the estimated long-term yield under sub-paragraph (c), and 10% weight to the prevailing average yield under sub-paragraph (d)

[2] The LTRFDR formula was last modified since 1 January 2013.

And B is the market yield of the 30-year SGS.

The table below specifies the X% and Y% to be applied as at each valuation date:

Valuation Date	X%	Y%
31 Dec 2013	90%	10%
31 Dec 2014	70%	30%
31 Dec 2015	50%	50%
31 Dec 2016	30%	70%
31 Dec 2017	10%	90%
31 Dec 2018*	0%	100%

**For 31 Dec 2018 and beyond, the 30-year SGS yield will be used for liabilities with duration of 30 years and above.*

2.4 For **Scenario 2**, the discount rate to be used for liabilities with durations of 30 years and above will be the 30-year SGS yield.

Determination of Matching Adjustment ("MA")

2.5 The second consultation paper has set out the proposals to introduce a MA to the risk-free discount rate for life business, and the conditions that should be met before MA can be applied. **Scenario 3 helps to test the impact of the MA proposal**.

2.6 **Insurers are required to use the workbook "MAS_Matching Adjustment_v1.0" ("Matching Adjustment worksheet") to compute the amount of MA to be applied.** The instructions and methodology to calculate the MA are contained in the workbook.

2.7 The MA is to be applied as a parallel shift to the entire risk-free discount rate curve for the eligible products. Please note that C1, C2 (other than the credit spread risk requirement), C3 and C4 requirements will be computed assuming that MA does not apply[3]. For the C2 credit spread risk requirement, please refer to Section 4.7 on how calculations should be done.

[3] There is a risk that the MA portfolio may 'break', due to either qualifying assets or liabilities within the portfolio falling out of the eligibility criteria over time, or that unexpected stress events may occur necessitating early realisation of the assets. It is therefore reasonable and prudent that the risk charging be done on the basis that MA does not apply. However, since the purpose of the MA is to reduce the volatility of the insurer's solvency position to changes in credit spreads, some allowance can be given to reduce the insurer's credit spread risk requirement arising from changes to credit spreads.

3. COMPONENTS OF AVAILABLE CAPITAL

3.1 This section specifies the composition of Financial Resources and **is applicable for all QIS scenarios**. Unless otherwise specified in this QIS, the insurer should refer to the requirements set out in Insurance (Valuation and Capital) Regulations 2004.

3.2 The total financial resources of the insurer are made up of:

(a) Tier 1 Capital;

(b) Tier 2 Capital; and

(c) Regulatory adjustments

3.3 Tier 1 Capital and Tier 2 Capital will comprise the following:

Tier	Components
Tier 1 Capital	*Sum of*
	(a) Aggregate of surpluses of all insurance funds other than a participating fund;
	(b) Balances in the surplus account of each participating fund;
	(c) Where it is a licensed insurer incorporated in Singapore, the *sum of*:
	i. Paid-up ordinary share capital;
	ii. Surpluses of overseas branch operations;
	iii. Retained earnings;
	iv. Additional Tier 1 ("AT1") Capital, which will be the sum of the capital instruments issued by the insurer that comply with the requirements in Appendix 2.
	Less
	Reinsurance adjustment
	Less
	Financial resource adjustment, comprising: • Loans to, guarantees granted for, and other unsecured amounts owed to the insurer

	• Charged assets • Deferred tax assets • Intangible assets • Other financial resource adjustments
Tier 2 Capital	Tier 2 Capital of a licensed insurer incorporated in Singapore shall be the sum of the capital instruments issued by the insurer that comply with the requirements in Appendix 3.

3.4 For a licensed insurer incorporated in Singapore, Common Equity Tier 1 ("CET1") Capital will be taken to mean Tier 1 Capital less AT1 Capital.

3.5 A licensed insurer must ensure that at all times[4]:

(a) the CET1 Capital of the insurer is not less than *65%*[5] of sum of total risk requirements (excluding the risk requirements of participating funds) of the insurer; and

(b) the Tier 1 Capital of the insurer is not less than *80%* of the sum of total risk requirements (excluding the risk requirements of participating funds) of the insurer.

3.6 An insurer intending to issue or recognise any AT1 capital instrument or Tier 2 capital instrument for the purpose of inclusion as AT1 Capital or as Tier 2 Capital respectively should comply with the submission requirements stated in Appendix 4.

3.7 Capital instruments that have been approved by MAS prior to RBC 2's implementation date will be subject to the transitional arrangements set out in Appendix 5.

Reinsurance Adjustment

3.8 In the consultation paper on "Proposed Revisions to the Risk Based Capital Framework" issued in July 2011, MAS had proposed a number of changes that relate to the computation of the Reinsurance Adjustment. For the purpose of QIS 1,

[4] The following floors will replace the existing Tier 1 and Tier 2 limits under the current RBC framework,

[5] For the avoidance of doubt, this specific floor is only applicable for licensed insurers incorporated in Singapore.

insurers should assume that the following proposals will be introduced immediately so that the impact can be assessed[6]:

(a) To remove the recognition of the reinsurance arrangement between a Head Office and its branch in Singapore[7]. In other words, there is no reinsurance reduction for such reinsurance arrangements;

(b) To remove the recognition of the reinsurance arrangement between an insurer and its downstream entities[7]; and

(c) To include claims liabilities in the reinsurer's share of the liabilities for general business for the calculation of the Reinsurance Adjustment.

3.9 For the calculation of the reinsurance adjustment, the following default risk charge table[8] should be applied accordingly on the reinsurance reduction from the various reinsurance counterparties[9]:

Rating	Default Risk Charge (%)
AAA	0.5
From AA- to AA+	1.0
From A- to A+	2.0
From BBB- to BBB+	5.0
From BB- to BB+	10.5
From B- to B+	20.0

[6] This is notwithstanding that MAS is prepared to consider transitional arrangements (paragraph 8.3 of the consultation paper) as well as explore viable alternatives (Consultation Question 11 of the consultation paper).

[7] This means that in contrast to the current RBC framework which gives recognition to a branch's reinsurance arrangement with its Head Office as long as there is a written agreement between the branch and the Head Office, under RBC 2, the proposal is to remove this recognition whether or not there is a written agreement. Correspondingly, there should not be any reinsurance deduction (when valuing the insurers' liabilities) and no reinsurance adjustments resulting from these reinsurance arrangements between branch and Head Office. In addition, reinsurance recoverable (on paid claims) from these arrangements should be treated and reported as Inter-fund balances and intra group balances (due from), and outstanding reinsurance premiums owing to Head Office should be treated as Inter-fund balances and intra group balances (due to). The same treatment will also apply for reinsurance arrangements with downstream entities where the proposal is to remove this recognition as well.

[8] This default risk charge table is the same table that is proposed for the Counterparty Default risk requirement under C2 risk requirements.

[9] Which:

(a) in the case of the life business of the insurer, the reinsurance reduction is equal to the reduction in the value of the liabilities of the insurer in respect of its participating policies, non-participating policies and investment-linked policies due to reinsurance ceded to that reinsurance counterparty, excluding any special risk ceded by way of reinsurance; or

(b) in the case of the general business of the insurer, the reinsurance reduction is equal to the reduction in premium liabilities and claim liabilities of the insurer in respect of its general business due to reinsurance ceded to that reinsurance counterparty, excluding any special risk ceded by way of reinsurance.

CCC+ and below	48.5

where the reinsurance adjustment for a particular counterparty is the *product of the reinsurance reduction from that counterparty and counterparty default risk charge based on that counterparty's credit rating*

3.10 The same calculation is then repeated for all reinsurance counterparties, and the total reinsurance adjustment for the fund is the aggregate sum of all the corresponding reinsurance adjustments.

3.11 For counterparties that are unrated, these are to be treated as having a rating of "CCC+ and below", and the default risk charge of 48.5% will apply.

Example:

Total Reinsurance Reduction = 100,000

Reinsurance Counterparty	Reinsurance Reduction	Counterparty credit rating	Counterparty Default Risk Charge	Reinsurance Adjustment = Reinsurance Reduction x Default risk charge
Counterparty A	55,000	AA	1.0%	550
Counterparty B	35,000	BBB	5.0%	1,750
Counterparty C	10,000	Unrated	48.5%	4,850
Total				7,150

The resulting total reinsurance adjustment is therefore 7,150.

Regulatory Adjustment

(I) Aggregate allowances for provisions for non-guaranteed benefits

3.12 The allowance for provision for non-guaranteed benefits of a participating fund shall be calculated based on requirements set out in the Insurance (Valuation and Capital) Regulations 2004 but the amount will be reported as a positive regulatory adjustment to Financial Resources instead.

3.13 Please note that the concept of adjusted and non-adjusted capital ratio still applies when determining the amount of aggregate of allowance of provisions for non-guaranteed benefits to be adjusted.

(II) Negative Reserves

3.14 Insurers should not value the liability in respect of any policy to be less than zero, unless there are moneys due to the insurer when the policy is terminated on valuation date, in which event the value of the liability in respect of that policy may be negative to the extent of the amount due to the insurer.

3.15 The existing treatment of having negative reserves off balance sheet will remain but part of the negative reserves can be recognised as a form of regulatory adjustment to Financial Resources at both the insurance fund and company level.

3.16 To determine the amount of negative reserves to be recognised, the insurer will need to apply all insurance shocks under C1 requirement in the same manner when in determining the C1 risk requirements, and applying the same correlation matrix (set out in paragraph 4.2) to derive the after-shock negative reserves. The following table indicates the percentage of after-shock negative reserves that can be recognised at individual fund respectively:

Insurance Fund	**Percentage (%)**
Participating	50
Non-Participating	50
Investment-Linked	25

3.17 This amount is then added on as a regulatory adjustment to each fund respectively. For clarity, examples are provided in Appendix 1.

4. COMPONENTS OF REQUIRED CAPITAL

Component 1 (C1) Requirement – Life Business

4.1 The shocks to be applied for the purpose of QIS 1 are as follow:

C1 Risk Requirements	Factors
Mortality (Non-Annuity) Risk Requirement	+20% to BE mortality (non-annuity) rates
Mortality (Annuity) Risk Requirement	-25% to BE mortality (annuity) rates
Disability Risk Requirement	+20% to BE disability rates
Dread Disease Risk Requirement	+40% to BE rates where premium rates are guaranteed and +30% to BE rates where premium rates are not guaranteed for the duration of the policy
Other Insured Events (Accident & Health) Risk Requirement	+40% to BE rates where premium rates are guaranteed and +30% to BE rates where premium rates are not guaranteed for the duration of the policy
Lapse Risk Requirement	+50% on BE lapse rates or -50% on BE lapse rates, whichever produces a higher liability value
Conversion of Options Risk Requirement	+50% on BE conversion rates (for options provided to the policy owner) or -50% on BE conversion rates, whichever produces a higher liability value
Expense Risk Requirement	120% in first year and 110% thereafter of the insurer's best estimate of its future experience
Insurance Catastrophe Risk Requirement	Mortality shock: +0.5 death per 1000 to mortality rates across all ages; and Morbidity shock: +40 hospitalisation claims

	incidence per 1000 to rates across all ages **Additional Notes:** **Note 1**: The insurer is required to apply the above shocks simultaneously to derive the insurance catastrophe risk requirement for each insurance fund. The shocks are to be applied over the immediate one year of projections only and not for the entire duration of the liabilities. **Note 2**: The insurer is required to attribute the insurance catastrophe risk requirement to the mortality and morbidity shock respectively.

4.2 The insurer should apply the following correlation matrix to derive the diversified C1 requirement for life business:

		Mortality (non-annuity)	Mortality (annuity)	Other insured events	Dread Disease	Catastrophe Risk	
						Mortality Risk	Morbidity Risk
Mortality (non-annuity)		1	-0.25	0.5	0.5	0.25	0.75
Mortality (annuity)		-0.25	1	0.25	0.25	0	0.25
Other insured events		0.5	0.25	1	0.5	0.75	0.5
Dread Disease		0.5	0.25	0.5	1	0.5	0.25
Catastrophe risk	Mortality Risk	0.25	0	0.75	0.5	1	0.75
	Morbidity Risk	0.75	0.25	0.5	0.25	0.75	1

4.3 The formula to derive the diversified C1 requirement for life business is as follows:

$$\sqrt{\sum CorrLife_{r,c} * Life_r * Life_c}$$ + {Disability Risk Requirement ("RR") + Lapse RR + Conversion of Options RR + Expense RR }

where

$CorrLife_{r,c}$= the entries of the correlation matrix

$Life_r$, $Life_c$= Risk Requirement for Individual life sub-risks according to the rows and columns of correlation matrix

C1 Requirement is floored at zero.

4.4 A specific example to derive the diversified C1 requirement for life business is set out in Appendix 6.

4.5 For further clarity, examples have been provided in Appendix 1 to illustrate how C1 requirement can be derived, e.g. insurance shocks being applied to BEL, and when diversification and PAD should be taken into account.

C1 Requirement - General Business

4.6 The factors and methodology to derive C1 risk requirements for general business will remain the same as specified in the Insurance (Valuation and Capital) Regulations 2004.

Component 2 (C2) Requirement

4.7 For the purpose of this QIS, the shocks to be applied are as follows:

<table>
<tr><th>C2 Risk Requirements</th><th>Factors</th></tr>
<tr><td>Equity Investment Risk Requirement</td><td>To calculate the equity investment risk requirement, insurers are to:

▪ Apply the following factors to the market value of each equity exposure

<table>
<tr><td>Equities listed in Singapore and Developed Markets</td><td>40%</td></tr>
<tr><td>Equities listed in Other Markets</td><td>50%</td></tr>
<tr><td>Unlisted Equities (including private equity and hedge funds)</td><td>60%</td></tr>
</table>

▪ The equity investment risk requirement is then taken to be the aggregate of the calculations for all equity exposures

<u>Additional Notes:</u>

Note 1: The types of instruments for which the equity investment risk requirement is applicable will remain the same, and are as specified in</td></tr>
</table>

<table>
<tr><td></td><td>paragraph 2(1) of the Fourth Schedule of the Insurance (Valuation and Capital) Regulations 2004. However, so as to be aligned with Notice MAS 637 for banking, debt instruments which are convertible into equity at the option of the issuer or automatically by the terms of the instruments shall be characterised as equity exposures. For avoidance of doubt, paragraphs 2(2) (on how to the derive the position in relation to every depository receipt, warrant, convertible security, or other equity derivative), paragraphs 2(6)-2(8) (on adjustments for warrants or options) and paragraphs 2(9)-2(10) (on interest rate add-on for equity derivatives) of the Fourth Schedule will still be applicable under RBC 2.

Note 2: Insurers should refer to the constituent countries in MSCI's World Equity Index for countries that are to be classified as Developed Markets for risk charging purposes. For ease of reference, this list has been provided in Appendix 7.

Note 3: Please refer to Appendix 8 for the proposed rules on the treatment of Collective Investment Schemes ("CIS").</td></tr>
<tr><td>Interest Rate Mismatch Risk Requirement</td><td>▪ Replaces the existing debt general risk requirement and liability adjustment requirement

▪ To calculate the interest rate mismatch risk requirement, insurers are to:

i. Recompute the value of interest rate sensitive assets and liabilities under the upward interest rate scenario, adjusting the base yield curve by the absolute upward interest rate adjustment, and calculating the resulting change in Net Assets[10].

ii. Recompute the value of interest rate sensitive assets and liabilities under the downward interest rate scenario, adjusting the base yield curve by the absolute downward interest rate adjustment, and calculating the resulting change in Net Assets.

iii. Taking the larger of the reduction in Net Assets from (i) and (ii) as the interest rate mismatch risk requirement.

<table>
<tr><th>Time of Cash Flow</th><th>Upward Adjustment (%)</th><th>Downward Adjustment (%)</th></tr>
<tr><td>3M</td><td>100</td><td>-70</td></tr>
<tr><td>6M</td><td>100</td><td>-60</td></tr>
<tr><td>1Y</td><td>100</td><td>-60</td></tr>
<tr><td>2Y</td><td>100</td><td>-60</td></tr>
<tr><td>3Y</td><td>100</td><td>-60</td></tr>
<tr><td>4Y</td><td>90</td><td>-50</td></tr>
</table>
</td></tr>
</table>

[10] Taken to be the value of the Assets less Liabilities

5Y	80	-50
6Y	80	-50
7Y	70	-40
8Y	70	-40
9Y	60	-40
10Y	60	-40
11Y	60	-40
12Y	60	-30
13Y	60	-30
14Y	60	-30
15Y	50	-30
16Y	50	-30
17Y	40	-30
18Y	40	-30
19Y	30	-30
20Y+	30	-30

For cash flows that occur between the time periods specified in the table above, please apply the upward and downward adjustments of the closest term.

- **Impact of Matching Adjustment ("MA") on the Interest Rate Mismatch Risk Requirement**

  This risk module is also applicable to the assets and liabilities in the MA portfolio. For clarity, the calculations are to be performed as if these separately identified and managed assets and liabilities were not eligible for the matching adjustment.

Additional Notes:

Note 4: The types of instruments for which the interest rate mismatch risk requirement is applicable will remain the same, and is specified in paragraph 3(1) of the Fourth Schedule of the Insurance (Valuation and Capital) Regulations 2004 under debt investment risk requirements. However, so as to be aligned with Notice MAS 637 for banking debt instruments which are convertible into equity at the option of the issuer or automatically by the terms of the instruments shall be characterised as equity exposures. For avoidance of doubt, paragraphs 3(2)-3(3) (on how to derive the position in relation to every debt derivative), 3(5)-3(6) (on how a pair of long and short positions in the same debt security may be excluded from calculations if they are matched) and paragraphs 3(13)-3(14) (on adjustments for options) of the Fourth Schedule will also still be applicable.

Note 5: With regard to the liabilities, this is to refer to:

	• In respect of life business, the Policy Liabilities for non-participating funds or investment-linked funds. For participating funds, this refers to the minimum condition liability of the fund. • In respect of general business, the Policy Liabilities, However, an insurer may elect not to recompute the value of liabilities for an insurance fund established and maintained in respect of general business, in which case the change in value of liabilities under the upward and downward interest rate scenarios is zero. **Note 6:** For clarity, the upward and downward percentage interest rate adjustments are to be applied on the risk-free rate, i.e. government yield curve relevant to the insurers' interest rate exposures **Note 7**: The calculated absolute interest rate adjustments are to be subject to a maximum of 200 basis points for both upward and downward scenarios. **Note 8**: Please refer to Appendix 9 for more instructions and guidance related to the calculations of the interest rate mismatch risk requirement. Some examples are also provided for insurers' reference. **Note 9**: Please refer to Appendix 10 on the recognition of diversification between funds for the interest rate mismatch risk requirement.
Credit Spread Risk Requirement	▪ Replaces the existing Debt Specific risk requirement. ▪ To calculate the credit spread risk requirement, insurers are to: i. First identify the relevant constant basis point credit spread adjustment in the table below for each credit-related security, which is to be determined based on the remaining term and credit rating[11] of the security. ii. Insurers should then revalue the security by adding this constant credit spread adjustment on the base yield curve for the security, calculating the resulting fall in value of the security. iii. Repeat the same calculation for all credit-related securities, and take the aggregate resulting fall in value of all securities as the credit spread risk requirement.

[11] Insurers are expected to perform an appropriate level of due diligence prior to the use of any credit rating for the purpose of calculating regulatory capital requirements.

Short-term ratings

Credit Rating[12]	A1+	A1	A2	A3	B and below
Adjustment	140	160	190	250	580

Long-term ratings

Term\ Credit Rating	AAA	From AA- to AA+	From A- to A+	From BBB- to BBB+	From BB- to BB+	B+ and below
Up to 5 years	140	160	190	250	420	580
Between 5 to 10 years	130	150	180	240	380	540
>10 years	100	120	150	200	340	490

- **Impact of Matching Adjustment ("MA") on the Credit Spread Risk Requirement**

  This risk module is applicable to the assets and liabilities separately identified and managed in the MA portfolio

  i. For the assets, the credit spread risk adjustment is applicable as if the assets were not eligible for the MA. (i.e. the calculations are the same as those of the other assets which are not in the MA portfolio)

  ii. For the liabilities, a revised MA will be applicable, which will be calculated based on the credit spread adjustments applicable to the assets within the MA portfolio. This revised MA will then be added to the risk-free discount rate used in valuing the liabilities.

  iii. The revised MA is to be calculated as follows:

  $$MA' = \Sigma\ W_i * F_i * CS_{adj\ i}$$ where;

  W_i is the weight corresponding to the proportion of investments in rating and duration band category i; and

  F_i is the adjustment factor for rating and duration band category i. For the purpose of this QIS, the adjustment factor will be set at 80% for assets with AAA, AA and A

[12] The ratings illustrated in this table make reference to S&P's long and short term ratings. Insurers can also use equivalent ratings from Moody's Investor Services, Fitch Inc and AM Best Company to derive the appropriate credit spread adjustment.

credit ratings, and 50% for assets with BBB credit rating; and

CS_{adj} is the credit spread adjustment for rating and duration band category i

iv. Please note that the derivation of the revised MA for liabilities has been built into the Matching Adjustment worksheet.

Additional Notes:

Note 10: The types of instruments for which the credit spread risk requirement is applicable will remain the same as that applicable under the debt specific risk requirement, and is specified in paragraph 3(1) of the Fourth Schedule of the Insurance (Valuation and Capital) Regulations 2004 under debt investment risk requirements. However, so as to be aligned with Notice MAS 637 for banking debt instruments which are convertible into equity at the option of the issuer or automatically by the terms of the instruments shall be characterised as equity exposures. For avoidance of doubt, paragraphs 3(2)-3(3) (on how to derive the position in relation to every debt derivative), 3(5)-3(6) (on how a pair of long and short positions in the same debt security may be excluded from calculations if they are matched) and paragraphs 3(13)-3(14) (on adjustments for options) of the Fourth Schedule will also still be applicable.

Note 11: Please note that for debt securities issued by a Statutory Board in Singapore and recognised multilateral agencies (as listed in Table 2 of the Sixth Schedule of the Insurance (Valuation and Capital) Regulations 2004), these are to adopt the credit spread adjustment based on the sovereign credit rating for Singapore Government Bonds

Note 12: For unrated debt securities, these are to adopt the credit spread adjustment in between "BB" and "BBB", which is as follows:

Term\Credit rating	Unrated
Up to 5 years	335
Between 5 to 10 years	310
More than 10 years	270

Note 13: For debt securities that are issued or fully guaranteed by governments or central banks of countries or territories that have a credit rating of at least "A-" are exempt from the credit spread risk charge module.

Note 14: For debt securities that are issued by governments or central banks that have a credit rating lower than "A-", these are subject to the credit spread risk requirement; however if these are in the national currency of the country, these can be notched up to the next higher credit

<table>
<tr><td></td><td>rating when deriving the credit spread adjustment that should be applied under this risk module.

Note 15: Please refer to Appendix 10 for more instructions and guidance related to the calculations of the credit spread risk requirement

Note 16: Please refer to Appendix 11 for our proposed rules on the treatment of Structured Products</td></tr>
<tr><td>Property Investment Risk Requirement</td><td>To calculate the property investment risk requirement, insurers are to:

▪ Apply the following factor to the market value of each property exposure

<table><tr><td>Immovable property for both investment and self-occupied purpose</td><td>30%</td></tr><tr><td>Collective real estate investment vehicles</td><td>35%</td></tr></table>
▪ The property investment risk requirement is then taken to be the aggregate of the calculations for all property exposures

<u>Additional Notes:</u>

Note 17: Please note that investments in companies that are engaged in real estate management or real estate project development or similar activities should not be considered as property investments, and instead should be treated as equity investments</td></tr>
<tr><td>Foreign Currency mismatch Risk Requirement</td><td>▪ This risk module is now applicable for all insurance funds of the insurer established and maintained under the Act (i.e. Singapore Insurance Funds and Offshore Insurance Funds)

▪ The foreign currency mismatch risk charge is 12%, instead of 8% previously.

▪ In calculating the foreign currency mismatch risk exposure:

i. For Singapore Insurance Funds, the same calculations as prescribed in the Insurance (Valuation and Capital) Regulations 2004 [13] will apply, except that the</td></tr>
</table>

[13] Regulation 7 of the Fourth Schedule.

	concession of 10% (see note 18) of the total value of assets will be removed. ii. For Offshore Insurance Funds, the same calculations as prescribed in the Insurance (Valuation and Capital) Regulations 2004 for Singapore Insurance Fund will apply, except that the concession of 20% of the total value of fund assets will apply instead of 10%. **Additional Notes:** **Note 18:** Under current RBC, insurers calculate the foreign currency risk exposure as being the higher of (a) the aggregate of net positions of the insurer in currencies which net open position is positive and (b) the absolute value of the aggregate of net open positions of the insurer in currencies which net open position is negative less 10% of the total value of assets in the insurance fund, subject to a minimum of zero
Counterparty Default Risk Requirement	▪ This will cover the following sub-modules: i. Loan counterparty risk (currently addressed in the loan investment risk requirement) ii. Derivative counterparty risk (currently addressed in the derivative counterparty risk requirement) iii. Reinsurance recoverable counterparty risk (currently addressed in the miscellaneous risk requirement) iv. Outstanding premiums counterparty risk (currently addressed in the miscellaneous risk requirement) v. Bank deposit counterparty risk (currently addressed in the miscellaneous risk requirement) vi. Any other counterparty risk for exposures which are currently addressed in the miscellaneous risk requirement and that have not been addressed by the credit spread risk module[14], including but not limited to:

[14] For investments in Structured Products, credit-related structured products will attract both credit spread risk charge and counterparty default risk charge (further elaborated in Appendix 11).

	○ intra-group balances not related to a contract of insurance[15] ○ any general guarantee of indebtedness and acceptance originating from the insurer which has not been accounted for as a liability in respect of policies ○ any contingent liability relating to any specific transaction to the insurer, other than any guarantee or acceptance that has been accounted for as a liability in respect of policies ▪ The risk exposures for these sub-modules will remain the same as that prescribed in the Insurance (Valuation and Capital) Regulations 2004. ▪ In order to calculate the counterparty default risk requirement, the insurer shall: i. first calculate the risk exposures for each counterparty in each sub-module; ii. calculate the risk requirement for each counterparty as the product of the risk exposure to a particular counterparty in (i) and the relevant default risk factor based on the credit rating[16] of the counterparty as set out in Table 1 below for *Reinsurance Recoverables on Paid Claims,* Table 2 below for *Outstanding Premiums & Agents' Balances* and Table 3 for *all other sub-modules listed above*. iii. Repeat the same calculation for all counterparties, and take the aggregate as the resulting total counterparty default risk charge.

[15] Please note that the Counterparty Default Risk Charge will not be applicable to balances due from other insurance funds, shareholders fund and overseas branches

[16] The ratings illustrated in this table make reference to S&P's credit ratings. Insurers can also use equivalent ratings from Moody's Investor Services, Fitch Inc and AM Best Company to derive the appropriate default risk charge. Insurers are expected to perform an appropriate level of due diligence prior to the use of any credit rating for the purpose of calculating regulatory capital requirements.

Table 1:

Counterparty	Outstanding period of exposure	Rating	Default Risk Charge (%)
Facultative Business	≤ 1 year	AAA	0.5
		From AA- to AA+	1.0
		From A- to A+	2.0
		From BBB- to BBB+	5.0
		From BB- to BB+	10.5
		From B- to B+	20.0
		CCC+ and below	48.5
	>1 year	All	100.0
Treaty Business	≤ 2 year	AAA	0.5
		From AA- to AA+	1.0
		From A- to A+	2.0
		From BBB- to BBB+	5.0
		From BB- o BB+	10.5
		From B- to B+	20.0
		CCC+ and below	48.5
	>2 year	All	100.0

Table 2[17]:

Counterparty	Outstanding period of exposure	Rating	Default Risk Charge (%)
Direct Insurance Business or Facultative Reinsurance Business	≤ 1 year	AAA	0.5
		From A- to AA+	1.0
		From A- to A+	2.0
		From BBB- to BBB+	5.0
		From BB- to BB+	10.5
		From B- to B+	20.0

[17] As set out in the response to feedback received from the consultation paper on "Proposed Revisions to the Insurance RBC Risk Requirements on Outstanding Premiums from Brokers, Agents and other Counterparties" issued in December 2008, the start date for ageing of outstanding premiums for all insurance business would be the premium accrual date, i.e. the date when the premiums are recognised in the insurer' books. Insurers should note:

a. To record the insurance liability in their books upon risk inception even if they choose not to record the accompanying premiums as assets in their books.

b. In instances where premium estimates were made and accrued, the start date for ageing of these premium estimates would be the premium accrual date. When insurers subsequently replace these premium estimates with the actual premiums advised in the statements, the start date for ageing of these actual premiums should continue to be the original accrual date of the premium estimates that were replaced.

		CCC+ and below	48.5
	>1 year	All	100.0
Treaty Reinsurance Business	≤ 2 year	AAA	0.5
		From AA- to AA+	1.0
		From A- to A+	2.0
		From BBB- to BBB+	5.0
		From BB- to BB+	10.5
		From B- to B+	20.0
		CCC+ and below	48.5
	>2 year	All	100.0

Table 3:

Rating	Default Risk Charge (%)
AAA	0.5
From AA- to AA+	1.0
From A- to A+	2.0
From BBB- to BBB+	5.0
From BB- to BB+	10.5
From B- to B+	20.0
CCC+ and below	48.5

Additional Notes:

Note 19: For unrated counterparties that are re/insurers, these are to be treated as having a rating of "CCC+ and below", and the default risk charge of 48.50% will apply

Note 20: For unrated counterparties that are persons other than a re/insurer, these are to be treated as having a rating of in between "BB- to BB+" and "BBB- to BBB+", and the default risk charge of 7.75% will apply

Component 3 (C3) Requirement

4.8 The factors and methodology to derive C3 risk requirement will remain the same as specified in the Fifth Schedule of the Insurance (Valuation and Capital) Regulations 2004.

Component 4 (C4) Requirement – Operational Risk Requirement

4.9 The operational risk requirement to be computed for each insurance fund established under the Insurance Act as follows:

X% of the higher of the past 3 years' averages of

- Gross written premium income(1); and
- Gross (of reinsurance) policy liabilities(2),

where X = 4% (except for investment-linked business, where X = 0.25%)

(1) Gross written premium income [18] without deducting premium ceded to reinsurance

(2) Gross (of reinsurance) policy liabilities. For Participating fund, this refers to the minimum condition liabilities.

4.10 The total operational risk requirement for each insurance fund established under the Insurance Act will be subject to an overall cap of 10% of the total risk requirements (after diversification benefit and excluding operational risk requirement) of the same fund for the insurer. Insurer is to report the lower of the operational risk requirement based on the above formula or 10% of total risk requirement of the same fund for the purpose of this QIS.

4.11 Insurers are required to submit the information used to derive the operational risk requirement in worksheet "Ops risk info".

[18] For life business, this will be the Gross Premium figure taken from Form 2 of the statutory returns.

5. DIVERSIFICATION BENEFIT BETWEEN ASSET AND INSURANCE RISKS

5.1 Diversification benefit is recognised between asset and insurance risks. The diversified C1 and C2 Requirements is to be calculated as follows:

$$\sqrt{C1^2 + C2^2}$$

where C1 is the C1 Requirement for both life and general business

and C2 is the C2 Requirement

5.2 The C3 Requirement and C4 Requirement are not considered in the calculation of the diversification benefit above.

5.3 The diversified C1 and C2 Requirements will be reported in Forms B and C of the Excel Workbook based on above formula. Please note that the calculations for this item have already been built into the Excel Workbook.

6. PRESCRIBED CAPITAL REQUIREMENT ("PCR") AND MINIMUM CAPITAL REQUIREMENT ("MCR")

6.1 Under the PCR, insurers are required to hold sufficient financial resources to meet the total risk requirements which correspond to a Value at Risk of 99.5% confidence level over a one-year period. The total risk requirements under the PCR at an insurance fund level are determined as the sum of:

(a) Diversified C1 and C2 Requirements (as calculated in Section 5);

(b) C3 Requirement; and

(c) C4 Requirement

6.2 The total risk requirements for a company will be the sum of the total risk requirements across its funds.

6.3 MAS will calibrate the MCR level after reviewing the results of QIS 1.

Appendix 1

ILLUSTRATIVE EXAMPLES

Example 1

Assuming that Insurer A only holds Singapore Government bonds and the only relevant insurance risks are mortality and longevity risks.

Before any shock

Value of Assets= 100

Value of Policy Liabilities (PL) = 65 (Assuming BEL=60 and PAD=5)

Assets less Liabilities= 35

After applying mortality (non-annuity) shock

Value of Assets = 100

Value of Policy Liabilities without PAD[19] = 70

Change in Assets less Liabilities= (100-60) - (100-70) = 10 (This is the change for mortality (non-annuity) risk module before diversification and PAD)

After applying longevity or mortality (annuity) shock

Value of Assets = 100

Value of Policy Liabilities without PAD = 65

Change in Assets less Liabilities = (100-60) - (100-65) = 5 (This is the change for longevity or mortality (annuity) risk module before diversification and PAD)

Incorporating diversification benefit and PAD

Diversified C1 = $\sqrt{10^2 + 5^2 + 2*10*5*(-0.25)} = 10$

Diversified C1 Liability = BEL + 10 = 60 + 10 = 70

C1 Requirement= Diversified C1 Liability – Policy Liabilities = 70 – 65 = 5

[19] The shocks are calibrated from the best estimate assumptions, hence they should be applied on the best estimate liabilities.

After applying interest rate shock

Assuming upward interest rate scenario applies

Value of Assets = 80

Value of Policy Liabilities (PL) = 60

C2 Requirement = (100-65) - (80-60) = 15

Example 2

Assuming that Insurer B only holds Singapore Government bonds and the only relevant insurance risks are mortality and longevity risks.

Before any shock

Value of Assets= 100

Value of Policy Liabilities (PL) = 0 (Assuming BEL = -10 and PAD = 1)

Assets less Liabilities= 100

After applying mortality (non-annuity) shock

Value of Assets = 100

Value of Policy Liabilities without PAD = -5 (before zerorisation for negative reserve)

Change in Assets less Liabilities= (100+10) - (100+5) = 5 (This is the change for mortality (non-annuity) risk module before diversification and PAD)

After applying longevity or mortality (annuity) shock

Value of Assets = 100

Value of Policy Liabilities without PAD = -2 (before zerorisation for negative reserve)

Change in Assets less Liabilities = (100+10) - (100+2) = 8 (This is the change for mortality (annuity) module before diversification and PAD)

Incorporating diversification benefit and PAD

Diversified C1= $\sqrt{5^2 + 8^2 + 2*5*8*(-0.25)} = 8.3$

Diversified C1 Liability = max(-10 + 8.3, 0) = 0

C1 Requirement= Diversified C1 Liability – Policy Liabilities = 0 - 0 = 0

After applying interest rate shock

Assuming upward interest rate scenario applies

Value of Assets= 80

Value of Policy Liabilities (PL) = 0 (Assuming it remains negative)

C2 Requirement = (100-0) - (80-0) = 20

Negative reserves after C1 shocks=10 - 8.3 = 1.7

Assuming Insurer B only has a non-participating fund, 50% of 1.7 can be recognised as regulatory adjustment.

IMPACT OF MATCHING ADJUSTMENT ON RISK REQUIREMENTS AND REGULATORY ADJUSTMENT

As mentioned in paragraph 2.7, C1, C2 (other than the credit spread risk requirement), C3 and C4 requirements will be computed assuming that MA does not apply. For the C2 credit spread risk requirement, as described in section 4.7, the policy liabilities will be revalued based on a modified MA which is itself based on a percentage of the credit spread adjustment applicable to the assets within the MA portfolio. Please refer to the Matching Adjustment worksheet for further details.

The amount of negative reserves to be recognised as regulatory adjustment will also be calculated assuming that MA does not apply.

Appendix 2

MINIMUM REQUIREMENTS FOR AT1 CAPITAL INSTRUMENTS

A capital instrument of the insurer shall not qualify for inclusion as AT1 Capital unless –

(a) the instrument is issued and fully paid-up in cash, whereby only the net proceeds received from the issuance of instruments shall be included as financial resources of the insurer;

(b) the holder of the instrument has a priority of claim, in respect of the principal and interest of the instrument in the event of a winding up of the insurer, which is lower than that of policy owners, other creditors of the insurer and holders of qualifying Tier 2 instruments, except where such persons rank equally with, or behind the holder of the instrument;

(c) the paid-up amount is not secured or covered by a guarantee of the insurer or any of its related corporations or other affiliates, or any other arrangement, that legally or economically enhances the priority of the claim of any holder of the instrument vis-a-vis the persons set out in sub-paragraph (b);

(d) the holder of the instrument waives its right, if any, to set off any amounts he owes the insurer against any subordinated amount owed to him due to the instrument and commits to return any set-off amounts or benefits received to the liquidator;

(e) the subordination provisions of the instrument are governed by the laws of Singapore. Where the capital instrument is to be subject to the laws of a jurisdiction other than Singapore, the insurer shall satisfy itself that all the relevant conditions specified in this paragraph are met under the laws of that jurisdiction;

(f) the principal is perpetual. In this regard, there shall be no maturity date, and there shall be no step-ups or other provisions that mandate or create an incentive for the insurer to redeem the capital instrument[20];

[20] For example, the following shall be considered as an incentive to redeem:

(a) a call option combined with an increase in the credit spread of the capital instrument if the call option is not exercised;

(b) a call option combined with a requirement or an investor option to convert the capital instrument into ordinary shares if the call is not exercised; or

(c) a call option combined with a change in reference rate where the credit spread over the second reference rate is greater than the initial payment rate less the swap rate (i.e. the fixed rate paid to the call date to receive the second reference rate).

(g) the capital instrument is callable at the option of the insurer only after a minimum of five years from the issue date[21], subject to the following requirements -

(i) A call option may be exercised only with the prior approval of MAS

(ii) The insurer shall not create an expectation that the call option will be exercised[22]; and

(iii) The insurer shall not exercise a call option unless -

(A) The instrument is replaced by the insurer with capital of the same or better quality, and the replacement of this capital is done at conditions which are sustainable for the income capacity of the insurer[23]; or

(B) The insurer demonstrates that its capital position is well above the minimum requirements after the call option is exercised

(h) any repayment of principal (e.g. through repurchases or redemptions) is done only with the prior approval of MAS. The insurer shall not assume or create expectations that approval will be given by MAS. Without prejudice to any other matter that MAS may consider relevant, MAS shall, in determining whether to grant its approval, consider whether the insurer's capital position is likely to remain adequate after redemption;

(i) With regard to the dividend or coupon on the instrument,

For avoidance of doubt, a conversion from a fixed rate to a floating rate or vice versa in combination with a call option without any increase in credit spread shall not in itself be deemed an incentive to redeem. The insurer shall, however, not do anything to create an expectation that the call will be exercised.

[21] MAS is not likely to grant approval for redemption within the first five years from the issue date except where–

(a) there is a change in tax status of the capital instrument due to changes in applicable tax laws of the country or territory in which the capital instrument was issued; or

(b) there is a change relating to the recognition of the capital instrument as an AT1 capital instrument.

MAS shall, in determining whether to grant approval, consider whether the insurer was in a position to anticipate the event at issuance.

[22] For example, MAS is not likely to grant approval for redemption where an insurer calls a capital instrument and replaces it with another capital instrument that is more costly (e.g. with a higher credit spread).

[23] Replacement issues can be concurrent with, but not after the capital instrument is called.

(i) The insurer has full discretion at all times to cancel distributions or payments[24];

(ii) any cancellation of dividend or coupon is not an event of default;

(iii) the insurer has full access to cancelled payments to meet obligations as they fall due; and

(iv) any cancellation of dividend or coupon does not impose restrictions on the insurer, except in relation to distributions to ordinary shareholders

(j) any dividend or coupon to be paid under the instrument is only paid to the extent that the insurer has profits distributable under any written law, determined from the latest statements of account lodged with MAS in accordance with section 36 of the Act or such other subsequent audited statements of account provided to the MAS;

(k) the instrument does not have a credit sensitive dividend feature. In this regard, the capital instrument shall not have a dividend or coupon that is reset periodically, based in whole or in part on the credit standing of the insurer or any insurance group entity;

(l) the instrument does not contribute to liabilities exceeding assets, if such a balance sheet test forms part of any national insolvency law governing the provisions of the instrument;

(m) where the instrument is classified as a liability under the Accounting Standards, it shall have principal loss absorption features[25] through –

(i) a provision under which it converts to ordinary shares if the CET1 Capital of the insurer falls below 70% of the total risk requirements (excluding participating funds); or

(ii) a write-down mechanism that allocates losses to the capital instrument if the CET1 capital of the insurer falls below 70% of the total risk

[24] In this regard, "dividend pushers" are prohibited. A capital instrument with a dividend pusher obliges the insurer to make a dividend or coupon payment on the instrument, if it has made a payment on another (typically more junior) capital instrument or share. This obligation is inconsistent with the requirement for the insurer to have full discretion at all times to cancel distributions or payments.

Furthermore, the cancellation of distributions or payments means that these payments are extinguished; it does not permit features that require the insurer to make distributions or payments in kind. For avoidance of doubt, "dividend stoppers" are not prohibited, provided that the insurer retains full discretion at all times to cancel distributions or payments. A capital instrument with a dividend stopper stops the insurer from making a dividend on its ordinary shares or other AT1 capital instruments if a dividend or coupon payment is not paid on its AT1 capital instruments.

[25] The principal loss absorption need not be triggered if the insurer is able to maintain a CET1 capital of 70% or more via other means.

requirements (excluding participating funds). The write-down shall have the following effects:

(A) it reduces the claim of the instrument in liquidation of the insurer;

(B) it reduces the amount to be repaid when a call option is exercised; and

(C) it partially or fully reduces dividend or coupon payments on the instrument;

Under both sub-paragraphs (i) and (ii) above, the conversion or write-down shall generate CET1 Capital.

In addition, the aggregate amount to be converted or written down[26] for all such instruments shall be at least the amount needed to immediately return the insurer's CET1 Capital to 70% of the total risk requirements (excluding participating funds) or, if this is not possible, the full principal value of the instruments;

(n) where an insurer issues the instrument in a foreign currency, the instrument shall be revalued periodically (at least monthly) in terms of Singapore dollars at the prevailing exchange rates. Where the insurer intends to use a swap to hedge the foreign exchange exposure arising from the foreign currency instrument, it shall consult MAS on the capital treatment applicable to the hedge prior to such use;

(o) neither the insurer nor any of its insurance group entities or associates can have purchased the instrument, nor can the insurer have directly or indirectly funded the purchase of capital instrument;

(p) the instrument does not have any feature that hinders recapitalisation, such as provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame[27];

(q) if the instrument is not issued out of an operating entity or the holding company of the insurer (e.g. issued out of a SPE), the proceeds from the issuance of the instrument shall be immediately available without limitation to

[26] The instrument cannot be written back up even if there are profits in the future.

[27] Where there is a dividend stopper within the terms and conditions of the AT1 capital instrument, such a feature shall not hinder the recapitalisation of the insurer. For example, a dividend stopper on an AT1 capital instrument shall not (a) attempt to stop payment on another capital instrument where such payments are not fully discretionary; (b) prevent distributions to ordinary shareholders for a period that extends beyond the point in time that dividend or coupon payments on the AT1 capital instrument are resumed; or (c) impede the normal operation of the insurer or any restructuring activity such as acquisitions or disposals.

an operating entity or the holding company of the insurer in a form which meets or exceeds all of the other requirements set out in this paragraph, for inclusion in AT1 Capital;

(r) the main features of the instruments, are disclosed accurately and in a manner that is easily understood by an investor;

(s) the agreement governing the issuance of the instrument cannot be amended or varied without the prior approval of MAS where such proposed changes could impact its eligibility as AT1 Capital;

(t) *the terms and conditions of the instrument contain provisions which ensure its loss absorbency at the point of non-viability (relevant only if this feature were to be incorporated).*

Appendix 3

MINIMUM REQUIREMENTS FOR TIER 2 CAPITAL INSTRUMENTS

A capital instrument of the insurer shall not qualify for inclusion as Tier 2 Capital unless–

(a) the instrument is issued and fully paid-up in cash, whereby only the net proceeds received from the issuance of instruments shall be included as financial resources of the insurer;

(b) the holder of the instrument has a priority of claim in respect of the principal and interest of the instrument, in the event of a winding up of the insurer, which is lower than that of policy owners and other creditors of the insurer, except where such persons rank equally with, or behind, the holder of the instrument ;

(c) The paid-up amount is not secured or covered by a guarantee of the insurer or any of its related corporations or other affiliates, or any other arrangement, that legally or economically enhances the priority of the claim of any holder of the instrument vis-a-vis the persons set out in sub-paragraph (b);

(d) the holder of the instrument waives its right, if any, to set off any amounts he owes the insurer against any subordinated amount owed to him due to the instrument and commits to return any set-off amounts or benefits received to the liquidator;

(e) the subordination provisions of the instrument are governed by the laws of Singapore. Where the capital instrument is to be subject to the laws of a jurisdiction other than Singapore, the insurer shall satisfy itself that all the relevant conditions specified in this paragraph are met under the laws of that jurisdiction

(f) with regard to the maturity of the capital instrument:

  (i) the instrument has a minimum original maturity of at least 5 years. Where the agreement governing the issuance of the capital instrument provides for the loan to be drawn down in a series of tranches, the minimum original maturity for each tranche shall be 5 years from the date of its draw-down;

  (ii) recognition of the instrument in Tier 2 Capital in its final five years to maturity is amortised on a straight-line basis by 20% per annum in accordance with the table immediately below. Where the capital instrument is repayable in separate tranches, each tranche shall be amortised individually, as if it were a separate loan; and

Table 1: Amortisation Schedule for a Tier 2 capital instrument

Years to maturity (x)	Amortised amount eligible to be included in Tier 2 Capital
x > 4	100%
3 < x ⩽4	80%
2 < x ⩽ 3	60%
1 < x ⩽ 2	40%
x ⩽ 1	20%

(iii) there are no step-ups or other provisions that mandate or create an incentive for the insurer to redeem the capital instrument[20].

(g) the capital instrument is callable at the option of the insurer only after a minimum of five years from the issue date[28], subject to the following requirements -

(i) A call option may be exercised only with the prior approval of MAS;

(ii) The insurer shall not create an expectation that the call option will be exercised[22, 29];

(iii) The insurer shall not exercise a call option unless -

(A) The instrument is replaced by the insurer with capital of the same or better quality, and the replacement of this capital is done at conditions which are sustainable for the income capacity of the insurer; or

(B) The insurer demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised

[28] MAS is not likely to grant approval for redemption within the first five years from the issue date except where–

(a) there is a change in tax status of the capital instrument due to changes in applicable tax laws of the country or territory in which the capital instrument was issued; or

(b) there is a change relating to the recognition of the capital instrument as capital for calculating Total CAR, and provided that the requirements set out in this sub-paragraph are met. MAS shall, in determining whether to grant approval, consider whether the insurer was in a position to anticipate the event at issuance.

[29] Where this requirement is met, an option to call the capital instrument after five years but prior to the start of the amortisation period will not be deemed an incentive to redeem.

(h) the holder of the capital instrument has no rights to accelerate the repayment of future scheduled payments (either coupon or principal), except in a bankruptcy or liquidation of the insurer;

(i) the instrument does not have a credit sensitive dividend feature. In this regard, the capital instrument shall not have a dividend or coupon that is reset periodically, based in whole or in part on the credit standing of the insurer or any insurance group entity;

(j) where the insurer issues the instrument in a foreign currency, the instrument shall be revalued periodically (at least monthly) in terms of Singapore dollars at the prevailing exchange rates. Where the insurer intends to use a swap to hedge the foreign exchange exposure arising from the foreign currency instrument, it shall consult MAS on the capital treatment applicable to the hedge prior to such use;

(k) neither the insurer nor any of its insurance group entities or associates can have purchased the instrument, nor can the insurer have directly or indirectly funded the purchase of capital instrument;

(l) if the instrument is not issued out of an operating entity or the holding company of the insurer (e.g. issued out of a SPE), the proceeds from the issuance of the instrument shall be immediately available without limitation to an operating entity or the holding company of the insurer in a form which meets or exceeds all of the other requirements set out in this paragraph, for inclusion in Tier 2 Capital;

(m) the main features of the instruments, are disclosed accurately and in a manner that is easily understood by an investor;

(n) the agreement governing the issuance of the instrument cannot be amended or varied without the prior approval of MAS where such proposed changes could impact its eligibility as Tier 2 Capital;

(o) *the terms and conditions of the instrument contain provisions which ensure its loss absorbency at the point of non-viability (relevant only if this feature were to be incorporated).*

Appendix 4

SUBMISSION REQUIREMENTS FOR AN INSURER INTENDING TO ISSUE OR RECOGNISE A CAPITAL INSTRUMENT AS AT1 OR TIER 2 CAPITAL

The insurer shall -

(a) consult MAS well in advance to allow adequate time for review if the capital instrument has additional features which are not explicitly addressed in Appendix 2 for AT1 Capital, or Appendix 3 for Tier 2 Capital; and

(b) submit the following documents to MAS before including such issuance as AT1 Capital or Tier 2 Capital:

(i) a declaration signed by the Chief Executive of the insurer confirming –

(A) that the insurer is responsible for complying with the requirements for inclusion of the issuance of the AT1 capital instrument as AT1 Capital, or the issuance of the Tier 2 capital instrument as Tier 2 Capital;

(B) that all the requirements for the inclusion of the issuance of the AT1 capital instrument or Tier 2 capital instrument set out *[in the relevant regulations/notices]* have been met;

(C) the expected date on which the issuance would be included as AT1 Capital or Tier 2 Capital; and

(D) that the insurer is aware that MAS may take such necessary action against the insurer, including requiring the exclusion of the issuance for inclusion as AT1 Capital or as Tier 2 Capital, if the issuance does not, or subsequently does not, comply with the requirements set out *[in the relevant regulations/notices]*;

(ii) all the executed agreements and offering documents governing the issuance of the AT1 capital instrument or Tier 2 capital instrument;

(iii) all external legal opinions obtained in respect of the issuance of the AT1 capital instrument or the Tier 2 capital instrument stating that the requirements in Appendix 2 and Appendix 3 (where applicable) have been met;

(iv) a memorandum of compliance stating how the issuance complies with each of the requirements set out in Appendix 2 and Appendix 3 (where applicable) and identifying the relevant portions of the agreements and offering documents governing the issuance of the AT1 capital instrument or Tier 2 capital instrument which address each requirement;

(v) the information and documents that are to be submitted on the enforceability of requirements to ensure loss absorbency at the point of non-viability (similar to Annex 6B of MAS Notice 637) *(relevant only if this feature were to be incorporated)*; and

(vi) where the agreements and offering documents governing the issuance of the AT1 capital instrument or Tier 2 capital instrument are governed by the laws of a jurisdiction other than Singapore, a written external legal opinion from an advocate and solicitor qualified to practise Singapore law, that he has reviewed all the agreements and offering documents governing the issuance, including any legal opinion from foreign law practitioners provided pursuant to paragraph (iii) and the memorandum of compliance, and confirms that the memorandum of compliance read together with such agreements, offering documents, legal opinions and any letter of undertaking provided by the insurer or any insurance group entity address the requirements of Appendix 2 or Appendix 3, as the case may be.

For the purpose of paragraph (iii), the written external legal opinion shall be reasonably unqualified, in particular with respect to the prohibition on provisions which mandate or create incentives for the redemption of the instrument, and other requirements relating to loss absorption, priority of claims, waiver of set-off amounts or benefits and subordination.

Appendix 5

TRANSITIONAL ARRANGEMENTS FOR CAPITAL INSTRUMENTS PREVIOUSLY APPROVED BY MAS

Capital instruments that have been approved by MAS that do not meet, in full, the requirements set out in -

(a) Appendix 2 (for a Tier 1 resource approved under Paragraph 1(2)(c)(iv) of the First Schedule of the Insurance (Valuation and Capital) Regulations 2004) ;or

(b) Appendix 3 (for a qualifying Tier 2 instrument approved under Paragraph 1(4)(b) of the First Schedule of the Insurance (Valuation and Capital) Regulations 2004)

shall be phased out from *[RBC 2 Full Implementation Date].* Fixing the base at the nominal amount of such instruments outstanding[30] on *[RBC 2 Full Implementation Date]*[31], their recognition shall be capped at 90% with effect from *[RBC 2 Full Implementation Date]*, with the cap reducing by 10 percentage points in each subsequent year.

[30] The base shall reflect the outstanding amount that is eligible to be included in the relevant tiers of capital under the *[relevant regulations/notices]*. In this regard, to the extent that a Tier 2 capital instrument has begun to amortise before *[RBC 2 Full Implementation Date]*, the base shall take into account the amount after amortisation and not the full nominal amount. For avoidance of doubt, individual Tier 2 capital instruments that are subject to amortisation requirements shall continue to be amortised by 20 percentage points in each subsequent year.

[31] Capital instruments denominated in a foreign currency shall be included in the base, using their values in the reporting currency of the insurer as at *[RBC 2 Full Implementation Date]*. The base will therefore be fixed in the reporting currency of the insurer throughout the transition period. At each subsequent reporting date, such capital instruments shall be valued as they are reported on the balance sheet of the insurer (adjusting for any amortisation in the case of a Tier 2 capital instrument), and be subject to the relevant caps throughout the transition period.

Appendix 6

SAMPLE CALCULATION OF DIVERSIFIED C1 REQUIREMENT FOR LIFE BUSINESS

Type of Risk Requirement (RR)	Value of RR	Prescribed Correlation Matrix Applicable?
Mortality (Non-annuity)	100	✓
Disability	50	
Mortality (Annuity)	30	✓
Expense	20	
Lapse	300	
Other Insured Events	40	✓
Dread Disease	80	✓
Insurance Catastrophe (Mortality)	10	✓
Insurance Catastrophe (Morbidity)	20	✓

Undiversified C1 Requirement for Life Business
= 650 (Sum of the above risk requirements)

Diversified C1 Requirement for Life Business

$$= \sqrt{\{ 100^2 + 30^2 + 40^2 + 80^2 + 10^2 + 20^2 + 2*[(-0.25)*100*30 + 0.5*100*40 + 0.5*100*80 + 0.25*100*10 + 0.75*100*20 + 0.25*30*40 + 0.25*30*80 + 0.25*30*20 + 0.5*40*80 + 0.75*40*10 + 0.5*40*20 + 0.5*80*10 + 0.25*80*20 + 0.75*10*20] \}} + 50 + 20 + 300$$

$$= 575$$

Appendix 7

LIST OF COUNTRIES IN MSCI WORLD EQUITY INDEX

MSCI - Developed Countries

Australia
Austria
Belgium
Canada
Denmark
Finland
France
Germany
Greece
Hong Kong SAR
Ireland
Israel
Italy
Japan
Netherlands
New Zealand
Norway
Portugal
Singapore
Spain
Sweden
Switzerland
United Kingdom
United States

Appendix 8

TREATMENT OF COLLECTIVE INVESTMENT SCHEMES

Instructions and Clarifications

1. For Collective Investment Schemes ("CIS"), the insurer may calculate the asset risk charge by looking-through to the underlying securities held by the CIS and treating the asset holdings as separate and distinct investments. Each of these assets should then be subject to the relevant C2 risk module:

    - For CIS which invests a portion or entirely in debt securities or debt derivatives, the insurer can treat the underlying debt securities which are of the same currency as a single debt security and calculate the risk charges in the relevant risk modules by assuming the average maturity, coupon and credit quality of the debt securities or debt derivatives.

2. Insurers will also be allowed to allocate the underlying exposures in reference to the investment mandate of the scheme. But in doing so, the allocation must be done in such a manner as to produce the maximum overall capital requirement, i.e. in that it invests, to the maximum extent allowed, in the asset class that attracts the highest risk requirement, and then continues making investments in descending order until the maximum total investment level is reached. An example has been included later to illustrate this.

3. In cases where the insurer chooses not to adopt the look-through approach, either based on the actual allocation of the underlying exposures or the investment mandate, the insurer can apply a 50% risk charge to the market value of the CIS.

4. Where a look-through approach is taken, the insurer must provide and maintain sufficient evidence to demonstrate that the proposed allocation of the investment exposure of the CIS into the relevant risk charge modules is justifiable and reasonable.

5. Insurers should consult MAS should there be any uncertainty on the risk requirement treatment for its Collective Investment Scheme holdings.

Example illustrating how insurers should make reference to the investment mandate of the CIS when deriving a suitable risk charge

A CIS has a mandate that states that it invests 20-30% in listed Singapore equities and 70-80% in equities listed in Other Markets. For risk charging purposes, since equities that are listed in Other markets attract a higher risk charge,it should be assumed that the CIS invests 20% in listed Singapore equities and 80% in equities listed in Other Markets in order to produce the maximum overall capital requirement for the CIS.

The resulting risk charge for the entire CIS is therefore (20% x 40%) + (80% x 50%) = 48%

Appendix 9

CALCULATION OF INTEREST RATE MISMATCH AND CREDIT SPREAD RISK REQUIREMENTS

Instructions and Clarifications

1. In order to derive the absolute upward and downward interest rate adjustments, insurers should multiply the government yield curve relevant[32] to the interest rate exposure by the percentage upward adjustment and percentage downward adjustments respectively[33].

    - For interest rate sensitive assets; where the market value of exposures in a particular currency is immaterial (less than 5% of the total market value of all interest rate sensitive assets), the insurer may use the US Government yield curve instead of its own actual government yield curve, to determine the interest rate adjustments for exposures in that currency.

2. The government yield curves derived by insurers must be based on market observable yields. Insurers can refer to paragraph 4.2.4 of the SAS Guidance Note ("GN") L02 for various approaches that can be taken to determine the market yield of government curves.[34] Insurers should then adjust the base yield curve[35] relevant to the interest rate exposure by adding to the base yield curve, the absolute amounts of the calculated upward and downward interest rate adjustments, to revalue the assets and liabilities under the upward and downward scenarios respectively.

    - For insurers' interest rate sensitive assets; where the market value of exposures in a particular currency is immaterial (less than 5% of the total market value of all interest rate sensitive assets), the insurer may use the US Government yield curve as a proxy for its own actual government yield curve.

[32] The relevant government yield curve refers to the currency that the interest rate exposure (both assets and policy liabilities) is denominated in.

[33] Subject to a maximum absolute change in interest rates of 200 basis points for both upward and downward interest rate scenarios.

[34] We note that this GN is for the valuation of policy liabilities for life business and paragraph 4.2.4 provides guidance for determination of SGS market yields specifically. However, the approaches proposed can also be used to determine the market yield of other government curves, and thus can be used for the purposes of interest rate and credit spread risk charging as detailed under this appendix.

[35] For policy liabilities and risk free assets (government securities), the base yield curve is the corresponding government yield curve. For other assets, insurers should calculate a single spread over the relevant government yield curve that equates the discounted present value of cash flows to the market value of the asset. Insurers should then assume that the base yield curve for these assets is the sum of the government yield curve plus the constant spread

3. Floating rate instruments are to assume a term until the next coupon reset date.

4. For callable bonds, if the bond has a market price above the call price, then these are to assume a term to first call date. For those with market price below the call price, these are to assume a term to final maturity.

5. For credit spread adjustments, insurers should similarly revalue the exposures by adding the constant spread adjustment (determined based on the remaining term and credit rating of that security) to the base yield curve of the security.

   Please see below a summary of the applicability of the interest rate mismatch and credit spread risk charges on the asset and liabilities that are covered under the Matching Adjustment, vis-a-vis those that are not covered under the Matching Adjustment:

Ring-fenced portfolio covered under Matching Adjustment mechanism		
	Interest Rate Mismatch Risk Charge	**Credit Spread Risk Charge**
Asset exposures	**Applicable** Calculations to be performed as would be if the assets were not eligible for the matching adjustment	**Applicable** Calculations to be performed as would be if the assets were not eligible for the matching adjustment
Policy Liabilities (BEL + PAD)	**Applicable** Calculations to be performed as would be if the policy liabilities were not eligible for the matching adjustment (i.e. Assuming the matching adjustment is zero)	**Applicable** A revised Matching Adjustment which makes partial allowance for spread stress calculated based on mix of assets in the ring-fenced portfolio. The revised MA should then be added as a parralel shift to the entire interest rate term structure used to discount liability
Assets and Liabilities not covered under Matching Adjustment mechanism		
	Interest Rate Mismatch Risk Charge	**Credit Spread Risk Charge**
Asset exposures	**Applicable**	**Applicable**
Policy Liabilities (BEL + PAD)	**Applicable**	**Not applicable**

Sample calculations of interest rate mismatch and credit spread risk requirements for asset exposures

Example 1 – Corporate Bond

SGD Corporate Bond	
Credit Rating:	AA
Remaining Term:	5 years
Coupon per 100:	4
Redemption	100
Clean Price:	105

1) Identify the relevant government yield curve for the corporate bond

Since the currency of this corporate bond is SGD, the relevant government yield curve is the Singapore Government Securities ("SGS") yield curve

2) Derive the base yield curve for the corporate bond

Calculated single spread over the SGS that equates the discounted present value of cash flows to the market value of the corporate bond

1.0%

Time, t	Cash Flows	SGS yield (Illustrative rate only)	Present Value Factor	Present Value of Cash Flows using SGS yield	Base Yield Curve = SGS (+) constant spread	Present Value Factor	Present Value of Cash Flows using SGS yield (+) constant spread
0	-	-			-		
1	4	0.3%	0.9970	3.99	1.3%	0.9872	3.95
2	4	0.5%	0.9901	3.96	1.5%	0.9708	3.88
3	4	0.8%	0.9764	3.91	1.8%	0.9481	3.79
4	4	1.4%	0.9459	3.78	2.4%	0.9097	3.64
5	104	2.0%	0.9057	94.20	3.0%	0.8629	89.74
				109.83			105.00

For Interest Rate Mismatch risk calculations - Compute the change in value of the coporate bond under the upward and downward scenarios

1) Derive absolute interest rate adjustments for the interest rate mismatch risk requirement calculations

** Do note that if the resulting calculated absolute adjustment exceeds 200 basis points, then the adjustment will be capped at 200 basis points*

The absolute adjustments are derived by multiplying the government yield curve relevant to the corporate bond, by the relevant prescribed % adjustment

Time, t	SGS yield (Illustrative rate only)	% Upward Adjustment	Absolute Upward Adjustment = SGS * % Upward Adjustment	% Downward Adjustment	Absolute Downward Adjustment = SGS * % Downward Adjustment
0	-	-	-	-	-
1	0.3%	128.0%	0.4%	-63.0%	-0.2%
2	0.5%	114.0%	0.6%	-61.0%	-0.3%
3	0.8%	102.0%	0.8%	-57.0%	-0.5%
4	1.4%	90.0%	1.3%	-54.0%	-0.8%
5	2.0%	78.0%	1.6%	-50.0%	-1.0%

2) Compute the change in value of the corporate bond under the upward and downward scenarios

Time, t	Cash Flows	Base Yield (+) Absolute Upward Adjustment	Present Value Factor	Present Value of Cash Flows using Base Yield (+) Absolute Upward Adjustment	Base Yield (+) Absolute Downward Adjustment	Present Value Factor	Present Value of Cash Flows using Base Yield (+) Absolute Downward Adjustment
0	-						
1	4	1.7%	0.9835	3.93	1.1%	0.9891	3.96
2	4	2.1%	0.9600	3.84	1.2%	0.9766	3.91
3	4	2.6%	0.9256	3.70	1.3%	0.9609	3.84
4	4	3.7%	0.8663	3.47	1.6%	0.9371	3.75
5	104	4.6%	0.8004	83.24	2.0%	0.9060	94.22
				98.18			109.68
				-6.82			4.68

These are the computed change in value of the corporate bond under the upward and downward scenarios

For Credit Spread risk calculations - Compute the change in value of the corporate bond from the credit spread adjustment

1) Identify the relevant constant basis point credit spread adjustment for the corporate bond

Credit spread adjustment based on term and credit rating of the corporate bond

Basis point increase Term\ Credit Rating	AAA	AA	A	BBB	BB	B
0-2	160	170	200	260	440	600
2-5	140	160	190	250	420	580
5-10	130	150	180	240	380	540
>10	100	120	150	200	340	490

2) Calculate the change in value of the corporate bond by adding this constant credit spread adjustment on the base yield curve for the corporate bond

Time, t	Cash Flows	Base Yield Curve	Base Yield Curve + constant credit spread adjustment	Present Value Factor	Present Value of Cash Flows using Base Yield Curve + constant credit spread adjustment
0	-				
1	4	1.3%	2.9%	0.9719	3.89
2	4	1.5%	3.1%	0.9409	3.76
3	4	1.8%	3.4%	0.9047	3.62
4	4	2.4%	4.0%	0.8550	3.42
5	104	3.0%	4.6%	0.7988	83.08
					97.77
					-7.23

This is the computed change in value of the corporate bond from the credit spread adjustment

Example 2 – Government Bond

USD Government Bond	
Credit Rating:	AA
Remaining Term:	3 years
Coupon per 100:	2
Redemption	100
Clean Price:	100

1) Identify the relevant government yield curve for the government bond

The relevant government yield curve is the United States Government Securities yield curve

2) Derive the base yield curve for the government bond

For government bonds, the base yield curve is the government yield curve

Time, t	Cash Flows	US Gov yield (Illustrative rate only)	Present Value Factor	Present Value of Cash Flows using SGS yield
0	-	-		
1	2	1.0%	0.9901	1.98
2	2	1.2%	0.9764	1.95
3	102	2.0%	0.9423	96.12
				100.05

For government bonds, we accept that discounting the cash flows by the observed government yield curve may not result in a value that equals the market value of the security exactly, although we do not expect the difference to be significant.

For government securities, insurers can perform the calculations for interest rate mismatch and credit spread risk (if applicable) by calculating the change in value from the prescribed shocks on the theoretical price, rather than the exact market value of the security.

For Interest Rate Mismatch risk calculations - Compute the change in value of the government bond under the upward and downward scenarios

1) Derive absolute interest rate adjustments for the interest rate mismatch risk requirement calculations

** Do note that if the resulting calculated absolute adjustment exceeds 200 basis points, then the adjustment will be capped at 200 basis points*

The absolute adjustments are derived by multiplying the government yield curve relevant to the government bond, by the relevant prescribed % adjustment

Time, t	US Gov yield (Illustrative rate only)	% Upward Adjustment	Absolute Upward Adjustment = US Gov Yield * % Upward Adjustment		% Downward Adjustment	Absolute Downward Adjustment = SGS * % Downward Adjustment
0	0.0%	-	-		-	-
1	1.0%	128.0%	1.3%		-63.0%	-0.6%
2	1.2%	114.0%	1.4%		-61.0%	-0.7%
3	2.0%	102.0%	2.0%		-57.0%	-1.1%

The resulting calculated absolute adjustment will be capped at 200 basis points, or 2.0%

2) Compute the change in value of the government bond under the upward and downward scenarios

Time, t	Cash Flows	Base Yield (+) Absolute Upward Adjustment	Present Value Factor	Present Value of Cash Flows using Base Yield (+) Absolute Upward Adjustment		Base Yield (+) Absolute Downward Adjustment	Present Value Factor	Present Value of Cash Flows using Base Yield (+) Absolute Downward Adjustment
0	-							
1	2	2.3%	0.9777	1.96		0.4%	0.9963	1.99
2	2	2.6%	0.9506	1.90		0.5%	0.9907	1.98
3	102	4.0%	0.8890	90.68		0.9%	0.9746	99.41
				94.53				103.39
				-5.47				**3.39**

These are the computed change in value of the government bond under the upward and downward scenarios

For Credit Spread risk calculations - Compute the change in value of the government bond from the credit spread adjustment

Since the US Government Bond has a credit rating of AA, which is higher than the minimum of A- in Note 10b, the credit spread risk module is not applicable

1) Identify the relevant constant basis point credit spread adjustment for the government bond

N/A

Basis point increase

Term\ Credit Rating	AAA	AA	A	BBB	BB	B
0-2	160	170	200	260	440	600
2-5	140	160	190	250	420	580
5-10	130	150	180	240	380	540
>10	100	120	150	200	340	490

2) Calculate the change in value of the government bond by adding this constant credit spread adjustment on the base yield curve for the corporate bond

N/A

Appendix 10

RECOGNITION OF DIVERSIFICATION BETWEEN INSURANCE FUNDS FOR INTEREST RATE MISMATCH RISK

Instructions and Clarifications

1. At the insurance fund level, insurers are to take the maximum loss from the upward or downward scenarios in determining the interest rate mismatch risk requirement.

2. However, at company level, we can allow diversification between some funds to be recognised. This applies to all funds excluding the Participating ("Par") fund.

3. For the calculation of this diversification benefit, there needs to be first a determination of a "dominant scenario" for the company as a whole, this scenario being either the upward or downward scenario which results in the maximum aggregated loss across all funds (excluding Par fund).

4. The result of such an approach may result in a reduction of required risk capital for interest rate mismatch risk requirement; if for example, a fund faces losses under say an increasing interest rate scenario while another fund faces losses under a decreasing interest rate scenario.

5. The mechanism for this approach has been built in into the QIS excel spreadsheet, so there is no additional calculations that need to be done by the insurer.

Appendix 11

TREATMENT OF STRUCTURED PRODUCTS

Instructions and Clarifications

1. Structured Products refer to investments that provide exposure to an underlying reference portfolio of assets or risks. Such risks can be in the form of any security, index, currency etc.

2. For such products, the Counterparty Default risk requirement is applicable, where the appropriate risk factor is determined based on the credit rating of product offerer.

3. In addition, Structured Products will also be subject to market-risk related charges:

   a. For credit-related Structured Products, the credit spread risk requirement is applicable and based on the following credit spread adjustment table:

Term\ Credit Rating[36]	**AAA**	**From AA- to AA+**	**From A- to A+**	**From BBB- to BBB+**	**From BB- to BB+**	**B+ and below**
Up to 5 years	220	260	300	400	670	930
Between 5 to 10 years	210	240	290	380	610	860
>10 years	160	190	240	320	540	780

   b. For other Structured Products, insurers should determine the appropriate market-risk related charge by looking through to the underlying reference assets or risks and applying the relevant risk requirement module. As Structured Products can be structured in many different ways, the insurer should determine the capital treatment of the underlying investments based on its economic substance rather than its legal form.

   As an alternative, insurers can choose to apply a 50% risk charge on the entire marked-to-market value of the investment.

4. Insurers are expected to provide and maintain sufficient evidence to demonstrate that the proposed allocation of the market risk exposure of the Structured Product into the relevant risk charge modules is justifiable and reasonable.

[36] Insurers are expected to perform an appropriate level of due diligence prior to the use of any credit rating for the purpose of calculating regulatory capital requirements.

5. Insurers should consult MAS should there be any uncertainty on the capital treatment for its structured products

Monetary Authority of Singapore