



# **BERMUDA MONETARY AUTHORITY**

## **CONSULTATION PAPER**

### **BERMUDA SOLVENCY CAPITAL REQUIREMENT UPDATE PROPOSAL**

**MARCH 2017**

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## **I. Background**

1. The Bermuda Monetary Authority (Authority) is considering restructuring certain aspects of the Bermuda Solvency Capital Requirement (BSCR) standard formula. The BSCR standard formula has served its purposes well overall, but as any other regulatory model it can and should be updated and improved whenever and wherever appropriate.
2. The Authority embarked upon an Economic Balance Sheet (EBS) framework development in 2010 and has issued a number of policy papers, conducted field testing and hosted a series of market meetings to develop a framework suitable for the Bermuda commercial insurance market. For the 2015 financial year, the Authority required commercial insurers to include in their regular statutory filing a trial run submission of their EBS filing with BSCR capital charge amendments for cash and cash equivalents credit risk, currency risk, concentration risk, and geographic diversification. These changes were ultimately adopted by the Authority and came into force for year-end filings for the financial year beginning on or after 1<sup>st</sup> January 2016 (i.e. for year-end 2016 for most insurers).
3. The changes performed to the valuation framework and to the BSCR standard formula were instrumental for Bermuda to achieve full equivalence with the European Solvency Regime, the so called Solvency II, a feature currently achieved by only two jurisdictions in the world and that cemented Bermuda's position as a world leading financial centre and reinforced its overall business attractiveness. However, notwithstanding these significant achievements, the Authority continues to monitor and evaluate the level of robustness, sophistication and comparability of Bermuda's capital requirements and continues to proactively ensure capital requirements are in line with best practices in terms of solvency regimes.
4. Changes made to the valuation framework reflect how the exposure measures used for certain capital charges were calculated and present an opportunity for an overhaul of the modelling approach for certain aspects of the BSCR standard formula. On 30<sup>th</sup> November 2016, the Authority issued a consultation paper on a series of potential adjustments to the BSCR standard formula. Responses to industry comments were provided in our "Response to Industry Comments – Bermuda Solvency Capital Requirement Update Proposal, November 2016" posted 15<sup>th</sup> March 2017.

5. This consultation paper updates the referred November 2016 Consultation Paper and discusses a series of potential adjustments to the BSCR standard formula which the Authority would like to test during the spring of 2017. For year-end filings for financial years beginning on or after 1<sup>st</sup> January 2017 (i.e. for year-end 2017 for most insurers) the BSCR changes will be calculated for reporting purposes (i.e. the official Enhanced Capital Requirement (ECR) ratio will be calculated under the current basis) and will then enter into force for financial years beginning on or after 1<sup>st</sup> January 2018 (i.e. for year-end 2018 for most insurers). They will apply (as applicable) to all Classes of insurers in the so called “commercial regime”, i.e. Class 3A, Class 3B, Class 4, Class C, Class D, Class E and Groups. Further information on the timeline for these changes is provided below.

<b>Milestone</b>	<b>Deadline</b>
Industry consultation (publish consultation paper for feedback)	30 <sup>th</sup> November 2016
Industry feedback due	31 <sup>st</sup> January 2017
Revise proposals based on industry feedback and prepare additional spreadsheets	15 <sup>th</sup> March 2017
Prepare draft rules	31 <sup>st</sup> March 2017
Trial-run of proposals as an additional request to the usual annual filing and to be filed until May 15 <sup>th</sup>	15 <sup>th</sup> May 2017
New rules published	30 <sup>th</sup> June 2017
New rules enter into force	1 <sup>st</sup> January 2018

6. The areas considered in this paper are equity risk, premium risk, credit risk, dependencies within premium and reserve risks, the overall risk aggregation process, operational risk, other BSCR adjustments, BSCR charges for run-off insurers, currency risk and grade-in arrangements.

7. A high level description of the approach is outlined in this paper. The calibration of the approaches has been performed using a mix of benchmarking with other major risk based supervisory regimes (Solvency II, the Swiss Solvency Test and the draft Insurance Capital Standard of the International Association of Insurance Supervisors), empirical data and expert judgment. The charges are calibrated to the underlying nature of risks underwritten in Bermuda and the equity risk charges implicitly take into account anti-procyclical considerations.
8. A scaled down version of the current BSCR spreadsheet containing the new calculations has been developed. Instructions for deriving the new required inputs will be made available by 31<sup>st</sup> March 2017. The filing of these additional spreadsheets will be voluntary but it is highly encouraged that insurers participate in this exercise to have a well-formed opinion on the proposals and to assess (well in advance) the impact these will have on their solvency position. This information can be filed alongside the annual filing or separately until 15<sup>th</sup> May 2016.
9. Another consultation paper with additional changes is expected to be produced in the second half of 2017. It will be field tested as part of the year-end filing for financial years beginning on or after 1<sup>st</sup> January 2017 (i.e. for year-end 2017 for most insurers) and will enter into force for financial years beginning on or after 1<sup>st</sup> January 2018 (i.e. for year-end 2018 for most insurers). Likely areas to be included in this upcoming consultation paper are: interest rate risk, risk mitigation techniques, use of management actions and the use of look through for the equity risk charge.
10. Any questions relating to these proposals should be directed to [riskanalytics@bma.bm](mailto:riskanalytics@bma.bm) in the first instance.

## II. Equity Risk

11. Current equity charges are set by type of financial instrument and range from 5% to 55%, with a significant component of the equity holdings (common stocks) being charged at 14%. On the one hand, with recent global developments, we have come to the conclusion that some of the equity risk charges are not adequate when compared to international standards. On the other hand, the current approach applies factor charges to exposure measures and adds them up, which is the equivalent to assuming perfect positive correlation between equity holdings which is a conservative assumption. We also believe there is value in changing the “bucketing approach” used to make it more consistent with other leading risk based solvency regimes.
12. The new proposed approach can be summarised as follows, an instantaneous shock will be applied to the balance sheet exposure (both relevant assets and technical provisions and segregated account companies (asset and liabilities)), typically to Net-Asset-Value (NAV)) as detailed below:

<b>Equity Holding</b>	<b>Type</b>	<b>Charge</b>
Strategic holdings	1 or 2	20%
Duration based (For Long-Term Insurers and Type 1 exposures only)	1	20%
Infrastructure (Non-affiliate holdings, non-duration based)	3	25%
OECD, Bermuda, EEA and other developed markets listed and selected mutual funds	1	35%
Equity P/S 1	1	0.6%
Equity P/S 2	1	1.2%
Equity P/S 3	1	2%
Equity P/S 4	1	4%
Equity P/S 5	1	11%
Equity P/S 6	1	25%
Equity P/S 7	1	35%
Equity P/S 8	1	35%
Equity Real Estate1	2	10%
Equity Real Estate2	2	20%
Letters of Credit	2	20%
Other	2	45%

<b>Correlation matrix</b>	<b>Type 1</b>	<b>Type 2</b>	<b>Type 3</b>
Type 1	1		
Type 2	0.75	1	
Type 3	0.75	0.75	1

Where,

- Strategic holdings: means equity investments in affiliate entities. If these investments are listed in developed markets, namely regulated markets in Bermuda or in countries which are members of the Organisation for Economic Cooperation and Development (OECD) or the European Economic Area (EEA) or in Hong-Kong or in Singapore or in other developed markets as published in the Authority's Guidance, then they will be classified as Type 1. Otherwise, these investments will be classified as Type 2.
- Duration based: means equity investments listed in regulated markets in Bermuda or in countries which are members of the OECD or the EEA or in Hong-Kong, Singapore or in other developed markets as published in the Authority's Guidance held by Long-Term insurers to cover retirement products where:
  - All assets and liabilities corresponding to the business are ring-fenced<sup>1</sup>, managed and organised separately from the other activities of the insurer, without any possibility of transfer.
  - The average duration of the liabilities corresponding to the business held by the insurer exceeds an average of 12 years.
  - The equity investments backing the liability are type 1 equity exposures, that is Bermuda or OECD listed equities or preferred shares (PS 6 to PS 8).
- Infrastructure (non-affiliate holdings, non-duration based): means equity investments in qualifying infrastructure investments (non-affiliate holdings, non-duration based).<sup>2</sup>

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<sup>1</sup> "Ring-fenced" shall be defined as assets and liabilities that:

1. are managed and organised separately from other Long-Term business of the life-insurance undertaking,
2. are recorded as a separate (internal) financial reporting segment within the Long-Term insurer's general account, and
3. have sufficient general account capital allocated to satisfy BSCR requirements on a stand-alone basis.

<sup>2</sup> Qualifying infrastructure investments are defined as investment in an infrastructure project entity that meets the following criteria:

1. The infrastructure project entity can meet its financial obligations under sustained stresses that are relevant for the risk of the project.
2. The cash flows that the infrastructure project entity generates for equity investors are predictable.
3. The infrastructure assets and infrastructure project entity are governed by a contractual framework that provides equity investors with a high degree of protection.
4. The infrastructure assets and infrastructure project entity are located in Bermuda or in the OECD.
5. Where the infrastructure project entity is in the construction phase the following criteria shall be fulfilled by the equity investor, or where there is more than one equity investor, the following criteria shall be fulfilled by a group of equity investors as a whole:
  - a) The equity investors have a history of successfully overseeing infrastructure projects and the relevant expertise.

- Listed equity in developed markets: means equity listed in regulated markets in Bermuda or in countries which are members of the OECD or the EEA or in Hong-Kong or in Singapore or in other developed markets as established per the Authority's guidance. It will also mean selected mutual funds defined as units or shares of alternative investment funds authorised as European Long-Term Investment Funds in accordance with Regulation (EU) 2015/760, of 29<sup>th</sup> April 2015, or units or shares of collective investment undertakings which are qualifying social entrepreneurship funds in accordance with article 3(b) of Regulation (EU) 346/2013, of 17<sup>th</sup> April 2013 or units or shares of collective investment undertakings which are qualifying venture capital funds as referred to in Article 3(b) of Regulation 345/2013 of 17<sup>th</sup> April 2013, and units or shares of closed-ended and unleveraged alternative investment funds where those alternative investment funds are established in the European Union or, if they are not established in the European Union, they are marketed in the European Union according to Articles 35 or 40 of Directive 2011/61/EU of 8<sup>th</sup> June 2011, as well as other similarly purposed investment funds as published in Authority's Guidance.
- Equity P/S 1 to 8: means preferred shares with rating 1 to 8, as in the current BSCR model.
- Equity Real Estate1: means company-occupied real estate exposures less encumbrances, as in the current BSCR model.
- Equity Real Estate2: means investment real estate exposures less encumbrances, as in the current BSCR model.
- Other: means equity investments not covered in any of the other categories above, namely equities not listed in stock exchanges of developed markets, equities which are not listed, hedge funds, commodities, other alternative investments and sundry assets.

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- b) The equity investors have a low risk of default, or there is a low risk of material losses for the infrastructure project entity as a result of the default.
  - c) The equity investors are incentivised to protect the interests of investors.

- 6. The infrastructure project entity has established safeguards to ensure completion of the project according to the agreed specification, budget or completion date.
- 7. Where operating risks are material, they are properly managed.
- 8. The infrastructure project entity uses tested technology and design.
- 9. The capital structure of the infrastructure project entity allows it to service its debt.
- 10. The refinancing risk for the infrastructure project entity is low.
- 11. The infrastructure project entity uses derivatives only for risk-mitigation purposes.

“Infrastructure project entity” means an entity which is not permitted to perform any other function than owning, financing, developing or operating infrastructure assets, where the primary source of payments to debt providers and equity investors is the income generated by the assets being financed.

“Infrastructure assets” means physical structures or facilities, systems and networks that provide or support essential public services.



13. Short equity exposures (other than those embedded in the technical provisions and segregated account companies) should be ignored for the purposes of the calculation. This provision will be reassessed as part of the upcoming consultation paper, once risk mitigation acceptance criteria are proposed. Should the NAV be negative for certain shocks then a null equity risk charge will be assigned.

### III. Premium Risk

14. The exposure measure for Property & Casualty (P&C) premium risk which deals with future (non-CAT) losses that will occur in the course of the next year is (Net) Premium Written. It has the advantage of being an objective, readily available and audited item, but it is not a prospective measure (although it can serve as a reasonable proxy for a stable book of business), does not take into account Bound But Not Incepted business (BBNI) and under-estimates the risk of multi-year (re)insurance contracts (the charge will be the same regardless of the number of the years covered in the contract.)
15. We will implement a new approach to deal with the premium risk base exposure measure (the actual capital factors per line of business will remain unchanged), including provisions on how to charge BBNI and multi-year (formulas are presented in bold). We will change the base exposure measure to “estimate of the net premiums to be earned during the next 12 months accounting period”.

- **Exposure measure = Base exposure + Multi-year exposure**

Where,

- Base exposure = Maximum (Estimate of the net premiums to be earned by the insurer during the next 12 months accounting period; net premium written at year end).  
Note that by definition this exposure measure will cover BBNI exposures.

If the insurer has met the following conditions,

- (a) the Board of Directors has decided that its earned premiums for each segment during the following 12 months will not exceed the net premium written at year end;
- (b) the insurer has established effective control mechanisms to ensure that the limits on earned premiums referred to in point (a) will be met;
- (c) the insurer has informed the Authority about the decision referred to in point (a) and the reasons for it.

The insurer may apply for a BSCR modification to calculate the base exposure as the estimate of the net premiums to be earned by the insurer during the next 12 month accounting period.

- **Multi-year exposure<sup>3</sup> = FP (existing) + FP (future)**

Where,

- ✓ FP (existing): The expected present value of premiums to be earned by the insurer after the next 12 month accounting period for existing contracts.
- ✓ FP (future): The expected present value of net premiums to be earned by the insurer where the initial recognition date falls in the following 12 months but excluding the net premiums to be earned during the 12 months after the initial recognition date.

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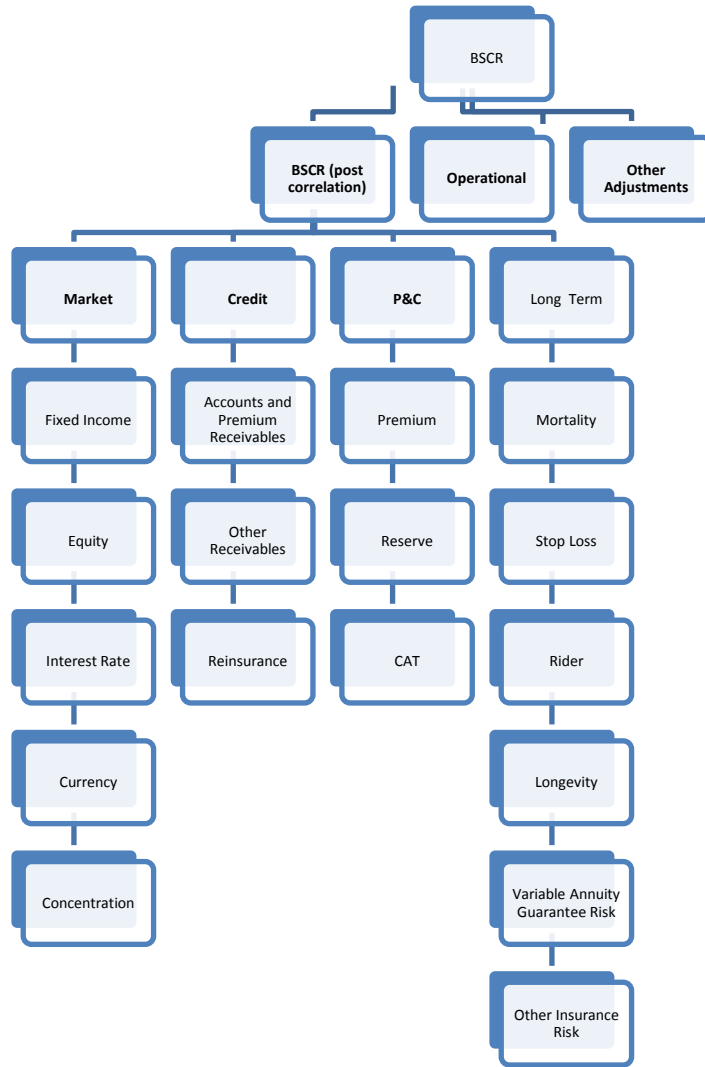
<sup>3</sup> In order to determine what contracts fall under multi-year exposure, insurers should take into account paragraph 122 of the Authority's Guidance Notes for Commercial Insurers and Insurance Groups' Statutory Reporting Regime, of 9<sup>th</sup> February 2016. For example, multi-year contracts with "getaway clauses", such as annual renewal of cancellation provisions may be treated as one-year contracts and thus excluded from multi-year exposure.

## IV. Credit Risk

16. The Authority is considering changes to three areas: future premium receivables, receivables on securities sold and reinsurance recoverable.
17. Future premium receivables (accounts and premiums receivable deferred - not yet due) under the EBS are moved to the liability side of the balance sheet and thus would no longer be captured by the BSCR credit risk charge. The Authority proposes to reinstate this exposure for the purposes of calculating the credit risk capital charge for this item using the previously applied 5% capital factor.
18. Receivables on securities sold are included as part of Sundry Assets on Line 13 of the statutory balance sheet (Form 1SFS), and as such attract a charge of 20% in the equity investment risk (other equity investments) module of the BSCR. These receivable balances are usually only outstanding for a few weeks, at most, and thus the risk is normally very low. The Authority proposes going forward to treat this item in a similar manner to another receivables item – accrued investment income that attracts a charge of 2.5% within the credit risk module.
19. Currently, the main exposure measure for reinsurance credit risk associated with future claims (premium risk and CAT) is reinsurance balances receivable (adjusted for reinsurance balances payable and collateral). This results in new insurers that have not had claims yet and that are reinsuring large portions of business not to have a credit risk charge. Additionally this exposure measure is not prospective and reflective of reinsurance exposures in stressed circumstances. We propose that the capital charge to be the maximum between the current approach and a new approach. In the new approach the capital charge will be determined by changing the current exposure measure to an exposure measure determined by the premium risk charge based on gross premiums and deducting the existing calculation based on net premiums. The new exposure measure will then be allocated per rating assuming an allocation (proportionally) similar to the one determined under the current approach (e.g. if 30% of the reinsurance balances receivable have a rating of “A” we will assume that 30% of the new exposure measure will also have a rating of “A”). In the case of new insurers without any reinsurance balances yet but with outward reinsurance contracts a “BBB” rating will be assumed in the calculation.

## V. Dependencies

20. Variance-covariance aggregation approaches were common modeling practice when the BSCR standard formula was first developed, and assuming independence between risks was not uncommon practice either. Currently, other leading risk based solvency regimes aggregate risks mainly through the use of correlation matrixes or copulas. Correlation matrixes are easy to understand and implement and may account for tail dependency behaviour if a prudent calibration is chosen (i.e. if a tail correlation matrix is used). By definition linear correlation matrixes do not account for non-linear effects but the risks where these effects are more likely to be material are already being modelled in the BSCR standard formula through the use of internal models (for CAT risk and variable annuity business) or in the case of operational risk by assuming a worst case scenario (perfect positive correlation with other risks). Copulas although theoretically more robust are more difficult to parametrise, implement and understand.
21. Since our standard formula is applicable to all classes of business in the commercial regime (with a few sectoral differences) we believe that a prudent selection of tail correlations matrixes strikes an adequate balance between tractability, robustness and risk sensitivity. It is our opinion that standard regulatory models should not be overly complicated, so to be easily implemented and supervised, and to avoid a sense of false precision which is particularly important in wholesale and bespoke markets.
22. In the existing BSCR, there is an aggregation of P&C premium and reserving risk amounts across lines of business, as well as an overall aggregation of risks across risk types. In the revised approach we are proposing to group underlying risk modules into market risk, credit risk, P&C insurance risk, Long-Term insurance risk and operational risk modules. The first four modules will be aggregated using a correlation matrix, with operational risk added to the result as at present to reach the final BSCR (and once the other adjustments proposed in section VII of this paper are added). Correlation matrices will be used to combine the various components into each of the first four modules as necessary, including replacing the current concentration adjustment within premium and reserve risks. Schematically the structure of the BSCR standard formula will be as follows:



23. The operational risk charge will continue to be added once all other amounts have been combined. Additional adjustments are added to the BSCR (post diversification) and operational risk charge arriving at the (final) BSCR.

24. The correlation matrix for combining the major risk types is proposed as follows:

	<b>Market</b>	<b>Credit</b>	<b>P&amp;C Ins</b>	<b>LT Ins</b>
<b>Market</b>	1			
<b>Credit</b>	0.25	1		
<b>P&amp;C insurance</b>	0.25	0.5	1	
<b>LT Insurance</b>	0.25	0.25	0	1

25. Market risk would comprise fixed income risk, equity risk, interest rate risk, currency risk and concentration risk, and is proposed to be aggregated as follows:

	<b>FI</b>	<b>Eq</b>	<b>Int</b>	<b>Curr</b>	<b>Conc</b>
<b>Fixed Income</b>	1				
<b>Equity</b>	0.5	1			
<b>Interest Rate</b>	0.25	0.25	1		
<b>Currency</b>	0.25	0.25	0.25	1	
<b>Concentration</b>	0	0	0	0	1

26. Credit risk would be simply determined as the sum of the charges in respect of the three components identified.

27. For P&C risk, the existing approach for premium risk and reserve risk makes an adjustment to allow for the degree of concentration of risk in the portfolio, but not necessarily for the relationship between different lines of business. We are therefore proposing to combine the various lines of business using the following correlation matrices (applied to post geographical diversified charges).

**Premium risk**

	Prop Cat	Prop	Prop NP	PA	PA NP	Aviatn	AviatnNP	C/S	C/S NP	Ergy O/M	Ergy O/MNP	US Cas	US CasNP	US Prof	US ProfNP	US Spec	US SpecNP	IntMotor	IntMotorNP	IntCas	IntCasNP	Retro Prop	Str/Fin Re	Health
Prop Cat	1																							
Prop	0.25	1																						
Prop NP	0.25	0.5	1																					
PA	0.25	0.25	0.25	1																				
PA NP	0.25	0.25	0.25	0.5	1																			
Aviatn	0.25	0.25	0.25	0.25	0.25	1																		
AviatnNP	0.25	0.25	0.25	0.25	0.25	0.5	1																	
C/S	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1																
C/S NP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1															
Ergy O/M	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1														
Ergy O/MNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1													
US Cas	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1												
US CasNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1											
US Prof	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	1										
US ProfNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	1									
US Spec	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1								
US SpecNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1							
IntMotor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1						
IntMotorNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1					
IntCas	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.25	0.25	0.25	0.25	1				
IntCasNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.25	0.25	0.25	0.25	0.5	1			
Retro Prop	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1		
Str/Fin Re	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	
Health	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1

**Reserve Risk**

	Prop Cat	Prop	Prop NP	PA	PA NP	Aviatn	AviatnNP	C/S	C/S NP	Ergy O/M	Ergy O/MNP	US Cas	US CasNP	US Prof	US ProfNP	US Spec	US SpecNP	IntMotor	IntMotorNP	IntCas	IntCasNP	Retro Prop	Str/Fin Re	Health	
Prop Cat	1																								
Prop	0.25	1																							
Prop NP	0.25	0.5	1																						
PA	0.25	0.25	0.25	1																					
PA NP	0.25	0.25	0.25	0.5	1																				
Aviatn	0.25	0.25	0.25	0.25	0.25	1																			
AviatnNP	0.25	0.25	0.25	0.25	0.25	0.5	1																		
C/S	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1																	
C/S NP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1																
Ergy O/M	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1															
Ergy O/MNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1														
US Cas	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1													
US CasNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1												
US Prof	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	1											
US ProfNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	1										
US Spec	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1									
US SpecNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1								
IntMotor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1							
IntMotorNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	1						
IntCas	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.25	0.25	0.25	0.25	1					
IntCasNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.25	0.25	0.25	0.25	0.5	1				
Retro Prop	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1			
Str/Fin Re	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	
Health	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1

28. The correlation matrix for combining the P&C insurance risk is proposed as follows:

	Prem	Res	Cat
Premium	1	0.25	0.25
Reserve	0.25	1	0.25
CAT	0.25	0.25	1

29. The correlation matrix for combining the long term insurance risk is proposed as follows:

	Mort	Stop Loss	Riders	Morbi & Dis	Long	VA Guar	Other
Mortality	1						
Stop Loss	0.75	1					
Riders	0.75	0.75	1				
Morbidity & Disability	0.25	0	0	1			
Longevity	-0.5	-0.5	-0.5	0	1		
VA Guarantee	0	0	0	0	0	1	
Other Insurance	0.25	0.25	0.25	0.25	0.25	0.25	1



## VI. Operational Risk

30. Operational risk is currently being modeled in the BSCR standard formula as a 10% uplift to the BSCR (post diversification) combined with a scorecard approach that takes into account operational risks and their associated risk management and control framework in order to arrive at a final adjusted uplift factor.
31. The Authority believes this approach remains suitable but proposes to change the calibration of the uplifting factors. Calibration of operational risk involves a significant degree of uncertainty and expert judgment and only recently industry and regulatory benchmarks have become available and sufficiently stable. A maximum cap of 10% is not in line with the charges produced by other leading risk based solvency regimes and it is not appropriate particularly for newly formed insurers or insurers going through significant M&A or restructuring activity, amongst others. The Authority purposes to change the maximum uplift factor to 20%.
32. To more closely align with the charges of other risk-based regimes and market developments, we propose to revise the scorecard adjusted uplift factor as it follows:

<b>Overall Score</b>	<b>Operational Risk Charge in % of the "BSCR post diversification"</b>
<=5,200	20%
> 5,200 <= 6,000	18%
> 6,000 <= 6,650	16%
> 6,650 <= 7,250	14%
> 7,250 <= 7,650	12%
> 7,650 <= 7,850	10%
> 7,850 <= 8,050	8%
> 8,050 <= 8,250	6%
> 8,250 <= 8,450	4%
> 8,450	2%

33. These two combined measures will have little impact on the capital position of insurers with effectively sound operational risk management (i.e. at the lower end of the adjusted factor); however, they will provide further incentive for insurers not in this position (i.e. at the higher end of the adjusted factor) to adequately develop, implement and document appropriate operational risk frameworks.

## VII. Other Adjustments

### Background

34. Several Bermuda-licensed insurance and reinsurance companies pay taxes in a foreign jurisdiction. Most common are the US Internal Revenue Code Section 953(d) companies, which have elected to pay US federal income tax. The ECR represents additional assets that Bermuda deems necessary to cover losses under adverse circumstances. In a loss scenario, tax-paying companies should be able to consider the impact on current and future taxes when determining the amount of additional assets. To the extent the losses would result in refunds of prior taxes paid or would simply be absorbed by existing or future taxable profits, it is appropriate and reasonable to consider this tax benefit within the requirements. This reduction in current or future taxes payable can serve to dampen the utilisation of capital upon a large loss, which is prudent and reasonable. Other regimes, such as the US and Solvency II, recognise this dampening effect in their required capital calculation.
35. As part of their financial reporting requirements, tax-paying companies analyse and record both current and deferred taxes within their jurisdiction's required accounting guidelines. Deferred Tax Assets (DTA) are established where it can be supported that recovery and recognition of the DTAs is expected based on the relevant accounting guidelines and tax laws enacted by the applicable jurisdiction. For example, losses generated in the current year may be utilised by carrying back to prior years and recouping taxes paid, or may be utilised through the ability to offset existing income deferred for tax purposes (i.e. existing Deferred Tax Liabilities (DTL)), or may be carried forward and utilised against future taxable profits as provided for under the applicable tax laws for the specific jurisdiction. In the US, losses generated in the current year can be carried back two to three years and carried forward 15 to 20 years depending on the entity. As such, the tax laws provide for considerable past and future time periods to utilise the losses and obtain the economic tax benefits.
36. Capital is held to defray losses upon a shock scenario. Upon the occurrence of a shock that produces a loss the tax-paying company would be able to first recoup prior year taxes paid (carryback) or reduce future tax in the form of lowering existing net DTLs or establishing a DTA (carry forward). When a net DTA position (i.e. future deductions) exists, additional scrutiny is necessary and the tax-paying company would need to demonstrate its ability to recognise these future deductions through the ability to produce future taxable income.
37. A company's Loss Absorbing Capacity (LAC) is determined by its ability to demonstrate that enough future profits or DTLs will be available to utilise the DTA. A company's Risk Margin, for example, could serve as a proxy for the amount of future profit embedded in the company's business. A higher Risk Margin is likely to signal a larger LAC.

## Proposal

38. We propose a simplified approach to adjusting the ECR for taxes that includes company-specific parameters. These parameters limit the amount of the adjustment based on each company's past, current and future tax situation as follows:

$$\text{Adjustment} = \min (\text{BSCR} \times t, \text{Limit}, 20\%)$$

Where:

- BSCR: the BSCR (post correlation and including operational risk) but excluding this "Adjustment"
- t: company's standard federal tax rate or in case of an Insurance Group a blended effective (federal) tax rate
- **Limit = Past LAC + Current LAC + Future LAC, as described below.**

Where:

- Past LAC: A company can recoup tax losses via a Loss Carryback provision, which represents the company's taxable income from previous years used to offset current year losses. The Carryback period varies by jurisdiction and is generally three years for US and Canada.

$$\text{Past LAC} = \text{Loss Carryback Provision} \times t$$

The Loss Carryback Provision would need to be added as an input item to the BSCR.

- Current LAC: A company's current tax loss absorbency is represented by its Net DTL position, i.e. current DTL less current DTA. A net DTL position means that the company owes tax to its Tax Authority. The amount owed (DTL) can be reduced by the tax deductibility arising from net losses under a shock scenario. A net DTA position means that the company already has accumulated tax deductions on its books. This reduces the ability to utilise additional tax deductions arising from net losses upon a shock.

$$\text{Current LAC} = \text{Current DTL} - \text{Current DTA}$$

Both of these items are readily available on the BSCR spreadsheet.

- Future LAC: the Authority proposes utilising the Risk Margin as a proxy for a company's future income, and therefore its ability to absorb future tax losses. The risk margin is the discounted cost of holding future capital requirements and represents to some extent the cost of doing business for in-force business. It is reasonable to assume that future profitability will have to cover this amount and under this assumption may serve as a conservative proxy for a company's future income.

$$\text{Future LAC} = \text{Risk Margin} \times t$$

In summary, the proposed adjustment is:

$$\text{Min (ECR} \times t, \text{Limit, 20\%)},$$

Where:

$$\text{Limit} = (\text{Loss Carryback} \times t) + (\text{Current DTL} - \text{Current DTA}) + (\text{Risk Margin} \times t)$$

39. The loss absorbing capacity of deferred taxes is a new and untested concept in risk based supervisory regimes that may lead to significant capital reductions. The Authority wishes to introduce this concept in a careful and prudential manner. Therefore we will limit the maximum credit allowed from the tax adjustment to the maximum cap set for operational risk (20%). The Authority may revisit this cap on the tax adjustment in due course, once this concept has been properly implemented and supervised in our regime.

## VIII. BSCR Charges for Run-Off Insurers

40. A significant number of run-off insurers are currently exempted from calculating the ECR although their existing available capital and surplus (which was by definition higher than the Target Capital Level (120% of the ECR)) at the time of run-off conversion was frozen and capital reductions or distributions can only be made with the prior written approval of the Authority. Run-off insurers in this context means “pure”/“traditional” run-off insurers and those insurers whose business model consists primarily of acquiring run-off books of business, namely through loss portfolio transfers and excludes insurers that operate on a going concern basis that may have a few legacy portfolios that were put into run-off.
41. The Authority will request all run-off insurers to calculate annually the ECR using the BSCR standard formula and applying standard BSCR factors for all risks. For loss portfolio transfers, insurers should apply for a BSCR modification to avoid potential double counting of exposure in premium and reserve risks (i.e. exposure will only count toward reserve risk).
42. Additionally, as part of the annual filing to the Authority, run-off insurers will have to include on the actuarial and run-off report comments and supporting analysis on the adequacy of the standard BSCR reserve risk factors taking into account the adverse loss reserve development potential of the carried reserves.
43. Additionally, the Authority wishes to clarify and emphasise that having capital in excess of the 120% ECR ratio is not in itself sufficient reason for the Authority to approve dividend requests. The BSCR reserve risk charge may underestimate the risk profile of certain run-off reinsurers (e.g. for insurers with asbestos, medical malpractice, long term care and other highly volatile and/or long tailed lines of business). Should this underestimation be material, the Authority may impose capital add-ons.
44. In addition to providing the BSCR as part of the dividend request, run-off insurers will have to include actuarial and run-off supporting analysis to assess the adequacy of the standard BSCR reserve risk factors taking into account the adverse loss reserve development and Incurred But Not Reported (IBNR) potential of the carried reserves and also to assess that the remaining capital is sufficient to ensure the complete run-off of the liabilities and all related expenses with high probability. Connected with these two points, run-off insurers should also provide details about their capital management strategy and how the implementation of this strategy is monitored.

## IX. Currency risk

45. Certain pegged currencies, can qualify for a reduced currency shock to be set in the Authority's Guidance in relation to the reporting currency, if they comply with the criteria below to be set in the Guidance:
- a) The pegging arrangement shall ensure that the relative changes in the exchange rate over a one-year period do not exceed the relative adjustments to the 25% factor.
  - b) One of the following criteria is complied with:
    - i. Establishment of the pegging arrangement by the law of country establishing the country's currency.
    - ii. Participation of the currency in the European Exchange Rate Mechanism (ERM II) for currencies pegged to the euro.
    - iii. Existence of a decision from the European Council which recognises pegging arrangements between this currency and the Euro for currencies pegged to the Euro.
46. For the purposes of point 41 a), the financial resources of the parties that guarantee the pegging and historical data shall be taken into account.
47. Where the reporting or foreign currency is the USD, insurers shall replace for the currencies below the 25% capital factor with:
- a) 0% for the Bermuda Dollar (BMD).
  - b) 0.75% for the Qatari Riyal (QAR).
  - c) 1% for Hong Kong Dollars (HKD).
48. Where the reporting or foreign currency is the Euro, insurers shall replace the 25% capital factor with:
- a) 0.39% when the other currency is the Danish Krone (DKK).
  - b) 1.81% when the other currency is the Bulgarian Lev (BGN).
  - c) 2.18% when the other currency is the West African CFA Franc (XOF).
  - d) 1.96% when the other currency is the Central African CFA Franc (XAF).
  - e) 2.00% when the other currency is the Comorian Franc (KMF).

## **X. Grade-in Provisions**

49. There will be a three-year grade-in period starting in the financial year beginning on or after 1<sup>st</sup> January 2018 (i.e. for year-end 2018 for most insurers). Insurers should calculate the ECR under both the current regime (i.e. without the changes proposed herein) and the new regime and reflect:
- 33% of the difference between the two calculations in the financial year beginning on or after 1<sup>st</sup> January 2018 (i.e. for year-end 2018 for most insurers), which means that the ECR for that year will correspond to the ECR under the current regime plus the referred 33% of the difference.
  - 66% of the difference between the two calculations in the financial year beginning on or after 1<sup>st</sup> January 2019 (i.e. for year-end 2019 for most insurers), which means that the ECR for that year will correspond to the ECR under the current regime plus the referred 66% of the difference.
  - 100% the difference between the two calculations in the financial year beginning on or after 1<sup>st</sup> January 2020 (i.e. for year-end 2020 for most insurers), which means that the ECR for that year will correspond the ECR under the new regime.