Session 12 PD, Regulatory and Solvency Changes in Bermuda: A Practical Case

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Regulatory and Solvency Changes in Bermuda: A Practical Case

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1. Background
Background

- Bermuda is a destination for financial institutions seeking robust but proportional regulation
  - Tax efficient environment and strong business infrastructure
    - 10% excise tax on re-insurance premiums takes effect in 2019 (5% in 2018), growing to 12.5% in 2026+
    - Up from 1% in the past
    - Would only apply to affiliated reinsurers
  - Bermuda’s enhanced commercial insurance regime reached Solvency II full equivalence from the European Union in 2016
    - Multi-year effort by the Bermuda Monetary Authority (“BMA”) and public and private sector stakeholders
    - Resulted in key regulatory changes
- This session reviews Bermuda capital requirements for life (re)insurers
  - Focus on new capital requirements which take effect on January 1, 2019
Bermuda Insurance Regulation Overview

- The BMA is responsible for regulating all financial institutions in Bermuda
  - Fully empowered insurance regulator with operational and financial autonomy
- Bermuda has a multi-license system of regulation which categorizes long-term insurance companies into five classes, including life business.
  - The objective of the class system is to retain light regulation for entities such as single captives, which insure only the risks of the parent corporation, while increasing regulatory stringency for firms that write business more broadly
- Bermuda has a specific statute regulating the life insurance industry, the Life Insurance Act 1978 (“Life Act”)
  - The act does not distinguish between insurers and reinsurers for the purposes of registration or regulation
Recent Key Regulatory Changes
Bermuda’s statutory reporting has evolved over the recent years with future potential updates to BSCR
2. Economic Balance Sheet ("EBS") Framework
Economic Balance Sheet ("EBS") framework
Purpose of EBS and fair value principle

- **Purpose**
  - Basis to determine the capital requirement

- **Overarching principles**
  - Substance over form
  - Proportionality

- **EBS fair valuation hierarchy**
  - Market price (with adjustments as needed)
  - Mark-to-model techniques
  - Maximize relevant observable inputs
  - No adjustment for own credit standing for liabilities
Developing EBS

Existing GAAP balance sheet is a starting point of EBS

Prudence Filters

EBS valuation adjustment

Assets

Economic capital and surplus

Technical Provisions (Insurance Liabilities)

Other Liabilities
Fair valuation of insurance obligations

Technical Provisions

- Allow for material guarantees and contractual options
- Discount cash flows using
  - Risk free rate plus
  - An appropriate liquidity adjustment
- Liquidity adjustment
  - Standard approach (risk neutral)
  - Scenario approach (real world)

Best Estimate Liabilities

- Risk Margin

Margin for prudence

- Higher risk, higher margin
- “Cost of capital” approach
  - Based on projected BSCR on non-financial risks
  - 6% annual charge
  - Discount at risk-free rate (without liquidity adjustment)

Unbiased, current assumptions
Best Estimate Liability – Standard Approach

Risk neutral approach

- Standard spot curve is used to discount risk neutral best estimate liability cash flows

Source: BMA
Best Estimate Liability – Scenario-based Approach

Real world approach

- Real world asset and liability cash flows are projected under eight real world scenarios defined by BMA
- The best estimate liability is set equal to the highest asset requirement (or liability cash flows discounted at asset rate) across all scenarios

Scenarios cover a range of moderately adverse yield curve movements (approximately 1 standard deviation from base)

* Scenarios 5 & 6, and 7 & 8 have twisted curves, but the pairs appear the same for the 10-year rate
Best Estimate Liability – Scenario-based Approach

Additional Considerations

- Limitations of assets supporting the liability

<table>
<thead>
<tr>
<th>Assets that are generally acceptable</th>
<th>Investment grade assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government, municipal, corporate (BBB- or higher) bonds</td>
</tr>
<tr>
<td></td>
<td>MBS, ABS, CMLs, CLOs, preferred stock, certificates of deposit, other debt instruments</td>
</tr>
</tbody>
</table>

| Asset classes that are not acceptable | Most equities with exceptions subject to approval from BMA |

<table>
<thead>
<tr>
<th>Asset classes that may be acceptable on a limited basis</th>
<th>Upon approval from BMA, but no more than 10% of portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Real estate, junk bonds</td>
</tr>
</tbody>
</table>

- Additional reporting requirement
  - Each of the 8 scenarios
  - Standard approach result
### Standard Approach vs Scenario-based Approach

#### Choice of an approach

**Standard Approach**

- Business managed under risk neutral approach

**Scenario Approach**

- Blocks with high liquidity premium
- Business managed under real world approach

- Fall below a certain level of asset-liability matching

<table>
<thead>
<tr>
<th>Company’s decision to choose</th>
<th>BMA may require an approach to use</th>
</tr>
</thead>
</table>

- High degree of optionality
3. Bermuda Solvency Capital Requirement ("BSCR")
Solvency Requirements

**Solvency Requirements**

Must meet minimum margin of solvency ("MMS") to be registered as a Class A or B insurer

Must meet both MMS and Enhanced Capital Requirement ("ECR") to be registered as a Class C, D or E insurer

**Minimum Margin of Solvency**

- Class A: greater of $120,000 or 0.5% of assets
- Class B: greater of $250,000 or 1% of assets
- Class C: greater of $500,000 or 1.5% of assets
- Class D: greater of $4,000,000 or 2% of first $250,000,000 of assets plus 1.5% of assets above $250,000,000
- Class E: greater of $8,000,000 or 2% of first $500,000,000 of assets plus 1.5% of assets above $500,000,000.

Assets = total assets - amount held in a segregated account.

**Enhanced Capital Requirement**

- ECR = max (BSCR or internal capital model, minimum solvency margin)
- Target Capital Level ("TCL") = 120% x ECR
- TCL is not regulatorily prescribed, but insurers falling below this level are subject to additional scrutiny by BMA
Bermuda Solvency Capital Requirement ("BSCR")

- Risk factors are applied to the Economic Balance Sheet
- Layered covariance matrixes
  - Individual risks are aggregated into Market, Long-Term, and Credit modules
  - Modules are aggregated into Basic BSCR
- Operational, loss absorbency and regulatory capital add-ons
- BSCR update effective January 1, 2019; final rules to be published July 31, 2018
  - Latest BSCR proposal (March 2018) introduced new risk aggregation matrices, reducing covariance benefit potential
  - Proposal to double the Operational Risk charge will also result in higher capital requirement
  - Changes to Equity Risk charges are expected to increase the charge on common stocks
  - Overhaul of Interest Rate Risk calculation
  - Unless noted otherwise, the BSCR described in this presentation focuses on the March 2018 version
Internal Capital Model ("ICM")

- BMA allows use of ICM instead of factor-based BSCR
- ICM reflects insurer-specific business profile, strategies, operations and risk management processes
- Considered by a few large players
  - Highly sophisticated
  - Lengthy approval process
- BMA is open to negotiation of ICM risk metrics
# High Level Comparison of BSCR and NAIC RBC

## Life and Annuity Business – by major risk categories

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>BSCR</th>
<th>NAIC RBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>BSCR is based on a consolidated EBS</td>
<td>Asset Risk - Affiliated Amounts (C-0)</td>
</tr>
<tr>
<td></td>
<td>Equity Investment, Fixed Income Investment, Credit, Concentration</td>
<td>Asset Risk – Unaffiliated Common Stock and Affiliated Non-Insurance Stock (C-1cs) Asset Risk - All Other (C-1o)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currency</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Interest Rate and Liquidity (ALM)</td>
<td>Interest Rate Risk (C-3a)</td>
</tr>
<tr>
<td>Credit</td>
<td>Counterparty credit risk</td>
<td>Asset Risk - All Other (C-1o)</td>
</tr>
<tr>
<td>Long-Term</td>
<td>Mortality, Morbidity and Disability</td>
<td>Insurance Risk (C-2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop Loss</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Riders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longevity</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Other Insurance Risk</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Variable Annuity Guarantee</td>
<td>Market Risk (C-3c)</td>
</tr>
<tr>
<td>Operational</td>
<td>Operational</td>
<td>Business Risk (C-4b)</td>
</tr>
<tr>
<td></td>
<td>Regulated non-insurance financial operating entities risk</td>
<td>N/A</td>
</tr>
<tr>
<td>Aggregation</td>
<td>A set of covariance matrices</td>
<td>Covariance formula + tax adjustment</td>
</tr>
</tbody>
</table>

- Differences are explored on the following slides
Factors are illustrative at typical target level of 150% BSCR and 350% RBC (NAIC RBC after tax)
After the target multiple, BSCR charges are punitive for the high and low rated corporate bonds
The BSCR model is somewhat simpler than the RBC model
- RBC charges vary for Commercial and Farm mortgages, considering loan to value, type of loan
- RBC charges for All Other Mortgages vary by the degree of delinquency
BSCR Market Risk – Equity
Common Stock, Preferred Stock, Real Estate, Derivatives and Other Assets

- BSCR calls for higher common stock factors (35% vs. 14%) – limited grandfathering of current charges
- Charge may be reduced to 20% if common stock is used to support long duration liabilities
- Preferred Stock charges for BSCR are the same as for RMBS, RBC charges are the same as other fixed income assets
- BSCR model does not explicitly address derivatives, these are included in “other tangible assets”
Under the BSCR model, counterparty risk will be assessed based on credit rating.
Where a reinsurer is not rated, but is regulated in a regime which applies minimum and/or a prescribed capital requirement, and the reinsurer fully meets its solvency requirements, it can be treated as rating class 4 (i.e., equivalent to BBB).
- Example: if the reinsurer is U.S. regulated, and meets the 200% RBC requirements (not subject to regulatory intervention solely on capital grounds), then it can be treated as BSCR rating class 4.
- Unrated companies would be treated as BSCR Ratings Class 8 (apart from those dealt with under the bullet above).
A diversification adjustment will be applied to the total credit risk to reflect the diversification of the holdings. This will be driven by the relationship of the size of the largest reinsurance exposure to the total of all reinsurance exposures.
- Diversification adjustment = (1-(largest exposure / total exposures)) * 40%
- Letters of credit supporting an exposure are recognized by replacing the rating of the reinsurer with the rating of the letter of credit issuer (if better).
- NAIC RBC assumes a pre-tax factor of 8bps of ceded reserves (net of policy loans) for all reinsurance ceded.
Mortality

- Insurance risk mortality charge is similar to the RBC C-2 approach; capital factors apply to the net amount at risk on an additive basis (i.e. a diminishing charge is applied to each successive NAR tiers, reflecting a decrease in risk for larger blocks of business)
- 50% reduction applies to adjustable products and accidental death products
  - Adjustable products are any insurance contract where the insurer has the ability to make a material adjustment to the premiums / cost of insurance charges / dividends, based on recent experience

Morbidity and Disability

- For critical illness insurance, including accelerated critical illness insurance, a prescribed capital factor applies to the net amount at risk, on an additive basis
- 50% reduction in capital risk factors applies to adjustable products
- Health insurance includes disability income, long-term care, waiver of premium, and other accidental and sickness products

Stop Loss

- 50% factor applies to the respective net annual earned premiums of stop loss coverages provided

Riders

- 25% factor applies to the net annual premium for insurance product riders not included elsewhere

Other Insurance Risk

- Captures other risks related to policyholder behavior, expenses and guarantees
There is no risk charge applicable for Annuities Certain and Fixed Annuities.

If longevity risk is heavily concentrated at ages above 80, companies will need to consult with the BMA (significant sensitivity at older ages).

Factors are applicable for direct written annuity business and traditional reinsurance arrangements.

Alternative approaches for longevity reinsurance will require BMA consultation.

RBC does not currently have an explicit risk charge for Longevity.
The interest rate risk calculation for the BSCR model is quite different from the RBC C-3 (factor based) and C3P1 approaches.

The BSCR interest rate risk calculation will go through an overhaul as a result of new rule implementation effective January 1, 2019:

- Current rules: simple calculation using the duration mismatch of the block of business following a 2% parallel shift in interest rates
- A credit of up to 50% is available based on a company’s ALM policies and procedures – similar to RBC credit

New rules prescribe a set of non-parallel “shocks” to be applied to the yield curve used for determining best estimate liabilities.

- The “shock” scenario that creates the most adverse result will then be used to determine the capital requirement
- The “shocks” will be published by BMA on annual basis and will include a grading mechanism
  - 75% of prior year + 25% of current year
- An insurer may choose to use either the current rules or the new rules to determine the interest rate risk charge.
The BMA allows the option to apply for the use of an internal model instead of the factor-based approach. Once choice is made, companies are unable to switch without first obtaining permission from the BMA.

**Internal Model**
- Use own methodology and assumptions, although certain aspects of the model could be prescribed
  - Real world economic assumptions
- Provide summaries of in-force data by type of guarantee and memorandum documenting assumptions development
- Certain stress tests must be performed (and disclosed) to show the impact on required capital
- Preferred approach for determining capital requirement is a one-year model with a 99TVaR threshold
  - Run-off model with 95TVaR also acceptable
- Hedging and other risk mitigation should be reflected in the model
- C3P2 is closer to the internal model approach (stochastic & principles based)
  - The NAIC RBC uses 90% TVaR over a runoff period

**Factor-Based Approach**
- The BSCR factor-based approach contains a degree of conservatism compared to internal models
  - “one size fits all”
- Variable annuity benefits are partitioned into five categories based on the type of the minimum guarantee
  - The capital risk factors differentiate by volatility levels and are applied to the net amount at risk
- Hedging is not explicitly recognized, but could obtain hedging credit from BMA if demonstrate a robust risk mitigation program is in place
The BSCR model is significantly more robust than the RBC with respect to Operational/Business risk

Unlike the simple factor-based approach adopted by the NAIC, the operational risk charge for the BSCR involves a qualitative assessment of the insurer’s risk management function and corporate governance known as the Commercial Insurer Risk Assessment or “CIRA”

- The CIRA framework rewards the insurer for achieving progress in each risk management area
- Operational Risk = BSCR (after covariance) x Op Risk Charge (differs by overall score)
- The operational risk charge was doubled in the March 2018 BSCR proposal
Overall BSCR – Current Formula

Aggregation of risks using covariance formula

\[
BSCR = \sqrt{C_{fi}^2 + C_{eq}^2 + C_{LTint}^2 + C_{curr}^2 + C_{conc}^2 + C_{LTcred}^2 + \left(C_{LTmortality} + C_{LTstoploss} + C_{LTriders}\right)^2 + C_{LTmorb}^2 + C_{op} + C_{adj}}
\]

- \(C_{fi}\) = capital charge in respect of fixed income investment risk;
- \(C_{eq}\) = capital charge in respect of equity investment risk;
- \(C_{LTint}\) = capital charge in respect of interest and liquidity risk;
- \(C_{curr}\) = capital charge in respect of currency risk;
- \(C_{conc}\) = capital charge in respect of concentration risk;
- \(C_{LTcred}\) = capital charge in respect of credit risk;
- \(C_{LTmortality}\) = capital charge in respect of long-term insurance risk – mortality;
- \(C_{LTstoploss}\) = capital charge in respect of long-term insurance risk – stop loss;
- \(C_{LTriders}\) = capital charge in respect of long-term insurance risk – riders;
- \(C_{LTmorb}\) = capital charge in respect of long-term insurance risk – morbidity and disability;
- \(C_{LTlong}\) = capital charge in respect of long-term insurance risk – longevity;
- \(C_{LTVA}\) = capital charge in respect of long-term insurance risk – variable annuity guarantee risk;
- \(C_{LTother}\) = capital charge in respect of long-term insurance risk – other insurance risk;
- \(C_{op}\) = capital charge in respect of operational risk;
- \(C_{adj}\) = capital charge in respect of regulated non-insurance financial operating entities.
Overall BSCR – Formula Effective January 1, 2019

Grade-in linearly over 10 years for Long-Term Insurers

\[
BSCR_{Cor} = Basic\ BSCR + C_{\text{operational}} + C_{\text{regulatoryadj}} + C_{\text{otheradj}} + C_{\text{AdjTP}}
\]

Where —

- \( CorrBBSCR_{i,j} \) = the correlation factors of the Basic BSCR correlation matrix
- \( i, j \) = the sum of the different terms should cover all possible combinations of \( i \) and \( j \)
- \( C_i \) and \( C_j \) = risk module charge \( i \) and risk module charge \( j \) which are replaced by the following:
  - \( C_{\text{Market}} \), \( C_{\text{LT}} \), \( C_{\text{Credit}} \)
    - market risk module charge
  - \( C_{\text{Market}} \) and \( C_{\text{LT}} \) are long-Term risk module charge
  - \( C_{\text{Credit}} \) = credit risk module charge

<table>
<thead>
<tr>
<th>( CorrBBSCR_{i,j} )</th>
<th>( C_{\text{Market}} )</th>
<th>( C_{\text{Credit}} )</th>
<th>( C_{\text{LT}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( C_{\text{Market}} )</td>
<td>1</td>
<td>0</td>
<td>0.125</td>
</tr>
<tr>
<td>( C_{\text{Credit}} )</td>
<td>0.25</td>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td>( C_{\text{LT}} )</td>
<td>0.125</td>
<td>0.25</td>
<td>1</td>
</tr>
</tbody>
</table>

- Market, Long-Term, and Credit Risk module charges involve correlation matrices as well (not shown)
- Operational and adjustment risks are non-diversifiable (same as current formula)
4. Case Study
Case Study*

Fixed and Payout Annuity Blocks of Business

- Long-term insurer with total assets backing reserves of $300 million registered class E
  - Product line 1: Fixed Annuities ("FA")
    - The block is out of the surrender charge period
    - No renewal premium
  - Product line 2: Payout Annuities ("PA")
    - SPIAs with life contingencies, average attained age of 70 years
- Asset Portfolio and Investment Strategy: Corporate Bonds and Treasuries, well diversified portfolio focused on stable return.
- Bermuda Technical Provisions (TP) vs. US Statutory Reserves

<table>
<thead>
<tr>
<th>($) millions</th>
<th>TP – Scenario</th>
<th>TP – Standard</th>
<th>US Stat Reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Annuity</td>
<td>143</td>
<td>148</td>
<td>150</td>
</tr>
<tr>
<td>Payout Annuity</td>
<td>139</td>
<td>160</td>
<td>150</td>
</tr>
</tbody>
</table>

- Bermuda technical provisions using the Scenario approach produces lower reserves because it reflects a higher spread in the discount rate
- The Scenario approach allows for realistic corporate bond credit spreads (net of defaults) and an allowance for asset-liability cash flow mismatch under stressed interest rate scenarios, while the Standard approach allows for the liquidity premium that is prescribed based on a representative portfolio (not specific to an entity)

*The results presented in this case study are for illustrative purposes only and do not represent actual financial metrics. These amounts should not be relied upon given their illustrative nature.
Asset Risk

- BSCR @ 150% vs. RBC @ 350%
- BSCR vs RBC – Fixed Income Risk Charge vs. C1o

- Fixed income risk charge before target multiple is 2.4% for BSCR and 0.9% for RBC
  - Target multiple of 150%/350% somewhat evens out the difference at 3.6% vs. 3.2% for BSCR/RBC respectively
- Non-investment grade assets represent 7% of the portfolio, assume BMA granted an exception to use these assets

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Case Study*

Insurance and ALM Risks

- **BSCR: Interest and Liquidity Risk**
  - Under current rules, both Payout and Fixed Annuities assume a 1 year mismatch, and 50% credit for the ALM program. Assumes the risk factor applies to the scenario-based best estimate liabilities
  - Assumes the same charge under new rules given the 1 year mismatch

- **BSCR: Longevity**
  - Assumes Payout Annuities are fully life contingent and have an average attained age of 70 years

- **BSCR: Other Insurance Risk**
  - Both Deferred Annuities and Payout Annuities receive 0.5% charge for the risk associated with policyholder behavior

- **RBC: C-3a**
  - Fixed Annuities are high risk with 1.0% post-tax factor
  - Payout Annuities are low risk with 0.25% post-tax factor
  - Assumes 50% credit as a result of a favorable C3 Phase 1 result

<table>
<thead>
<tr>
<th>Insurance Risk</th>
<th>100% BSCR</th>
<th>RBC (after tax)</th>
<th>150% BSCR</th>
<th>350% RBC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interest &amp; Liquidity</td>
<td>Longevity</td>
<td>Other Insurance</td>
<td>C-3a</td>
</tr>
<tr>
<td>Fixed Annuity</td>
<td>1.5</td>
<td>n/a</td>
<td>0.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Payout Annuity</td>
<td>1.5</td>
<td>5.8</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>3.0</td>
<td>5.8</td>
<td>1.4</td>
<td>1.9</td>
</tr>
</tbody>
</table>

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Case Study*

Operational Risk and Risk Aggregation

- **BSCR vs NAIC – Operational vs C-4**
  - BSCR: assumes mid-range CIRA score (risk charge of 5% under current rules, 10% under new rules). Risk charge applies to the BSCR (after covariance adjustment)
  - RBC: zero since FA has no renewal premiums (otherwise 2% pre-tax risk charge applies to the average 12-month FA premiums collected)

- **Risk Aggregation**
  - BSCR and RBC use different approaches to risk aggregation
  - Under new BSCR rules, most risks are not fully independent and aggregation uses multiple sets of correlation matrices

<table>
<thead>
<tr>
<th>Risk Capital Aggregation BSCR vs. RBC ($ millions)</th>
<th>BSCR @ 150%</th>
<th>RBC @ 350%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Rules</td>
<td>New Rules</td>
</tr>
<tr>
<td>Fixed Income Risk</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Concentration Risk</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>ALM Risk</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Longevity Risk</td>
<td>8.7</td>
<td>8.7</td>
</tr>
<tr>
<td>Other Insurance Risk</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Operational Risk</td>
<td>0.8</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Sum of Risks</strong></td>
<td><strong>27.9</strong></td>
<td><strong>28.9</strong></td>
</tr>
<tr>
<td>Correlation Adjustment</td>
<td>(11.9)</td>
<td>(9.9)</td>
</tr>
<tr>
<td><strong>Target Capital</strong></td>
<td><strong>16.0</strong></td>
<td><strong>19.0</strong></td>
</tr>
<tr>
<td>Correlation %</td>
<td>57.3%</td>
<td>65.8%</td>
</tr>
</tbody>
</table>

*The results presented in this case study are for illustrative purposes only and do not represent actual financial metrics. These amounts should not be relied upon given their illustrative nature.
Case Study*

BSCR Grading to New Rules vs RBC

- New BSCR rules grade in over 10 years starting in 2019 and ending in 2028
- Higher operational risk charge and lower diversification benefit result in a higher BSCR under new rules
- As the block ages, longevity risk charge drives BSCR above RBC
- Current RBC factors are under review

*The results presented in this case study are for illustrative purposes only and do not represent actual financial metrics. These amounts should not be relied upon given their illustrative nature.
Case Study*
Bermuda vs US Reserves + Capital

- Lower Bermuda total balance sheet requirement is driven by lower scenario approach reserves vs. US statutory reserve
- The two converge as the block runs-off and as new BSCR rules receive more weight

*The results presented in this case study are for illustrative purposes only and do not represent actual financial metrics. These amounts should not be relied upon given their illustrative nature.
Conclusions

Bermuda vs US

Bermuda Best Estimate Liability (“BEL”) vs. US Statutory Reserve
- Bermuda BEL may be lower than US Stat due to the “best estimate” nature of the reserve
- Blocks with a challenged ALM position may look worse in Bermuda
- Market Value vs. Book Value accounting may cause extra balance sheet volatility in Bermuda

BSCR vs NAIC RBC
- Less punitive capital charges for
  - High and low rated corporate bonds, alternative asset classes, and equities in comparison to RBC (illustrative 150% BSCR vs 350% RBC)
- Longevity capital charge drives up BSCR vs RBC, especially for older attained age blocks
- Covariance benefit
  - Current BSCR formula assumes most risks are independent → higher covariance benefit
  - Updated BSCR proposal (March 2018) introduced new risk aggregation matrices, reducing covariance benefit potential
  - Doubling the operational risk charge will result in higher capital requirement
  - Negative correlation between mortality and longevity is reflected in the formula, presenting capital optimization opportunities for companies considering Bermuda reinsurance
- RBC formula pairs certain risks (i.e., C-1o and C-3a) → covariance benefit is smaller
  - RBC C-0 (asset risk related to affiliates) does not have a covariance benefit; BSCR does
Thank you!!
## Contacts

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