What keeps management awake under multiple risk based capital ("RBC") regimes?

Florence Ng, FSA
Han Chua, FIA, CERA
1. Regulatory benchmarking:
   - Asia
   - Europe
   - International

2. RBC framework:
   - Hong Kong ("HK") RBC
   - QIS 1 practical experience

3. Case studies:
   - Strategic asset allocation
   - Product design/mix

4. Conclusion:
   - Capital optimization under multiple regimes

This pack was prepared by EY’s Finance, Risk, and Actuarial Change team.

The information in this pack should not be regarded as comprehensive or sufficient for making decisions, nor should it be used in place of professional advice.

Accordingly, EY Asia Pacific accepts no responsibility for loss arising from any action taken or not taken by anyone using this pack.

If you require any further information or explanations, or specific advice, please contact us and we will be happy to discuss matters further. Please contact your usual EY contact, or alternatively one of the contacts listed below.
What keeps management awake under multiple risk-based capital regimes?
## Regulatory benchmarking*

Let us compare different RBC regimes

<table>
<thead>
<tr>
<th>HK RBC QIS 1</th>
<th>SII</th>
<th>ICS</th>
<th>SG RBC 2</th>
<th>Bermuda SCR</th>
<th>C-ROSS</th>
<th>Thailand RBC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insurance Risk</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality &amp; Longevity Risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Morbidity Risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Expense Risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lapse Risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mass Lapse Risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Catastrophic Risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

| **Market Risk** | | | | | | |
| Interest Rate Risk | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Credit Spread Risk | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Equity Risk | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Property Risk | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Currency Risk | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Credit Default Risk | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| **Other Risk** | | | | | | |
| Operational Risk | X | ✓ | ✓ | ✓ | ✓ | ✓ |
| Other Risks | X | ✓ | ✓ | ✓ | ✓ | ✓ |

| **Miscellaneous** | | | | | | |
| Asset Hypothecation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| VA/MA/OAG | OAG/VA | VA/MA | OAG/VA/MA | VA (IP)/MA | VA/MA | VA |
| Negative Reserve Zerolisation/ Cash Surrender Value Flooring | X | X | X | Negative Reserve Zerolisation | X | CSV Flooring |

*The regulatory requirements are still being designed for a few regulatory regimes and the market practice is still emerging.

*Please contact the presenters for further benchmarking of other regulatory regimes
Regulatory benchmarking (continued)
Observations

Ø HKRBC QIS 1 was broadly similar to other regulatory regimes
Ø Level of stress parameters and level of biting scenarios differ across regulatory regimes
Ø A few regulatory regimes have other requirements. For example:
   Ø Matching Adjustment ("MA")
   Ø Volatility Adjustment ("VA")
   Ø Own Assets with Guardrails ("OAG")
RBC framework
Overview of HKRBC

11 May 2018
What keeps management awake under multiple risk-based capital regimes?
HKRBC framework

The proposed framework comprises a three-pillar framework

Pillar 1
- Market value of assets (MVA)
- Technical provisions – Best Estimate Liabilities (BEL) and Risk Adjustments (RA)
- Solvency Capital Requirements (SCR)
- Own Funds

Pillar 2
- Own risk and solvency assessment (ORSA)
- Holistic internal assessment of risks, including those not included in Pillar 1
- Stress and scenario testing
- Links to capital management

Pillar 3
- Market disclosure
- Supervisory reporting to facilitate market discipline and transparency

11 May 2018

What keeps management awake under multiple risk-based capital regimes?
HKRBC economic balance sheet
Key changes from HK statutory ("HKSTAT") basis to HKRBC basis

Key changes from HKSTAT balance sheet to HKRBC balance sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Insurance contract liability</th>
<th>Required Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 MVA</td>
<td>03 Gross premium valuation (G PV) (Life)</td>
<td>08 Risk-based SCR</td>
</tr>
<tr>
<td>02 Asset hypothecation (Life)</td>
<td>04 Contract boundary</td>
<td></td>
</tr>
<tr>
<td>05 RA</td>
<td>06 Discount curve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>07 Time value of options &amp; guarantees (TVOG) (Life)</td>
<td></td>
</tr>
</tbody>
</table>
Observations from HKRBC QIS 1
Solvency ratio generally dropped under HKRBC basis

- Our observations and case studies are based on our industry benchmarking of the HKRBC QIS 1 results
  - Average solvency ratio under the current capital regime was high
  - The estimated average solvency ratio based on HKRBC QIS 1 results dropped by over 300%
  - This was mainly because of a significant increase in required capital
  - Using OAG would help improve the solvency ratio
Observations from HKRBC QIS 1 (cont’d)
Available capital was affected differently

Available capital:

- Liabilities tended to decrease for:
  - Non-participating business
  - Unit-linked business
  - Term business

- Reasons for the decrease:
  - No surrender value flooring
  - No reserve zeroisation
Observations from HKRBC QIS 1 (cont’d)

Four main drivers for PCR

1. Credit spread risk
   - Asset hypothecation
   - Bonds with better credit rating

3. Equity risk
   - Asset hypothecation
   - Equity type held
   - Look-through of collective investment schemes (CIS)

2. Interest rate risk
   - Asset hypothecation
   - Duration mismatch
   - Downward scenario

4. Lapse risk
   - Product designs
   - (Additional) management actions
Case studies

What keeps management awake under multiple risk-based capital regimes?
Case study 1
A company selling only universal life products

Key statistics
- 100% universal life business
- 100% invested in fixed income securities
- 60% and 25% invested in rating 3 and 4 corporate bonds respectively
- 70% and 20% invested in rating 1 and 3 sovereign bonds respectively
- Solvency ratio dropped by 190%
- (BEL + TVOG) = 100% of HKSTAT reserve
- SCR = 40% of (BEL + TVOG)
Case study 2
A company selling only participating products

- Key statistics
  - 100% participating business
  - 65% invested in fixed income securities, 15% invested in equities and 15% invested in CIS and 5% in properties
  - 60% and 25% invested in rating 3 and 4 corporate bonds respectively
  - 75% and 25% invested in rating 1 and unrated sovereign bonds respectively
  - Solvency ratio dropped by 300%
  - (BEL + TVOG) = 100% of HKSTAT reserve
  - SCR = 25% of (BEL + TVOG)
Case study 3
A company selling participating, universal life & unit linked products

- Key statistics
  - 60% participating business, 20% universal life and 20% unit linked business
  - 90% invested in fixed income securities and 10% invested in CIS
  - 30% and 60% invested in rating 3 and 4 corporate bonds respectively
  - 60% and 20% invested in rating 2 and 4 sovereign bonds respectively
  - Solvency ratio dropped by 130%
  - (BEL + TVOG) to HKSTAT reserve ratio – 100% (participating), 110% (universal life), 80% (unit linked)
  - SCR = 40% of (BEL + TVOG)
Conclusion

What keeps management awake under multiple risk-based capital regimes?
Lessons learnt

What keeps management awake under multiple RBC regimes?

- Competing interest between key stakeholders (e.g. Group vs Entity)
- Multiple capital regimes across different jurisdictions with similarities and dissimilarities
  - Pillar 1 quantitative impact (e.g. biting scenario granularity)
  - Pillar 2 own risk and solvency assessment (e.g. management actions)
  - Pillar 3 market disclosure and supervisory reporting (e.g. equivalence)
- Management focus on capital optimisation under different regimes:
  - Strategic asset allocation (e.g. OAG)
  - Product design / mix (e.g. negative reserves zeroisation)
  - Reinsurance (e.g. longevity reinsurance/derivative)
  - Restructuring (e.g. merger & acquisition)
Questions

Comments

The views expressed in this presentation are those of the presenter.