

# SCALAR CALIBRATION

For Life insurance business

January 2024

A business of Marsh McLennan

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# EXECUTIVE SUMMARY

- In July 2023, the NAIC Group Capital Calculation (E) Working Group adopted the proposal to designate Excess Relative Ratio (ERR) scalars, which are used to adjust available and required capital for non-US insurance regimes, as the primary scalar methodology within the Group Capital Calculation (GCC). Replacing placeholder scalars with ERR scalars appropriately recognizes capital requirements for non-U.S. business in the GCC formula, thus generating appropriate GCC figures for regulators and the industry. Additionally, it is a significant step forward for the following reasons:
  1. ERR scalars recognize differences in reserve methodologies across jurisdictions
  2. ERR scalars can adjust to significant changes in jurisdictional solvency regimes, and
  3. Many global insurers already use the ERR methodology to allocate group capital
- Following the NAIC's adoption of the ERR, ACLI and six member companies engaged Oliver Wyman, which had developed the initial method for ERR scalars in 2015, to:
  - Define an approach to update and maintain the ERR scalars for use in the GCC
  - Update the ERR scalars for 2023, for selected Life and Health scalars
- While the work focused on Life and Health scalars, the approach was developed with the understanding that it could also be applied to Property & Casualty business
- In support of the initiative, the following objectives have been achieved
  - Identified sources of data in each jurisdiction including:
    - Scope of insurers comprising the industry average
    - Solvency ratios (industry average) for each jurisdiction
    - First point of regulatory intervention in each jurisdiction analyzed
  - Recommended methodological solutions to address changes to scalars over time:
    - Historical data series length to provide accurate scalar estimates balancing responsiveness to changes with limited volatility over time
    - Methodologies to adjust scalars for significant changes in jurisdictional solvency regimes (e.g., Bermuda in 2023, Japan in 2025)
- This document proposes scalars for 2023 and outlines the recommended methodology to calibrate scalars on an ongoing basis

# PROPOSED ERR SCALARS FROM 2023 CALIBRATION EXERCISE

A reconciliation from the 2015 calibration exercise is also provided below

Regime	1. 2022 GCC template	2. 2015 workbook	3. Regulatory triggers	4. Update local ratios for 2022	5. Update US for 2022	6. Use 3-years historical data	7. 2023 scalar <sup>1</sup>
EMEA	0.31	0.22	-	0.17	0.11	(0.01)	0.48
UK	0.31	0.22	-	(0.00)	0.06	(0.07)	0.21
Australia	0.30	0.24	-	0.00	0.07	(0.03)	0.28
Bermuda	0.44	0.17	0.13 <sup>2</sup>	0.09	0.08	(0.01)	0.46
Canada	0.15	0.10	Regime change 0.17	(0.20)	0.02	0.01	0.10
Japan <sup>4</sup>	1.01	0.77	-	0.19	0.29	(0.00)	1.24
Mexico	1.00	0.29	-	0.46	0.22	(0.18)	0.78
Singapore	1.00	0.27	Regime change 0.10	(0.09)	0.08	(0.05)	0.31
Korea RBC	1.00	0.24	0.25 <sup>3</sup>	(0.15)	0.03	0.09	0.46
Korea ICS							0.29
Switzerland	0.16	0.11	-	0.23	0.10	(0.04)	0.40
South Africa	1.00	n/a					0.33
Hong Kong	1.00	n/a					0.24
China	1.00	n/a					0.35
Taiwan	1.00	n/a					0.18

1. Calibrated based on regulatory intervention level of 200% ACL for the US

2. 2015 exercise used an intervention level of 120% ECR. 100% ECR was used for this calibration, consistent with NAIC GCC guidelines

3. 2015 exercise used an intervention level of 150% RBC. 100% RBC was used for this calibration, consistent with NAIC GCC guidelines

4. For Japan SMR; see discussion of regime changes for scalar illustrative calibration under the proposed ESR (reflecting both changes to intervention level and industry capital ratios)

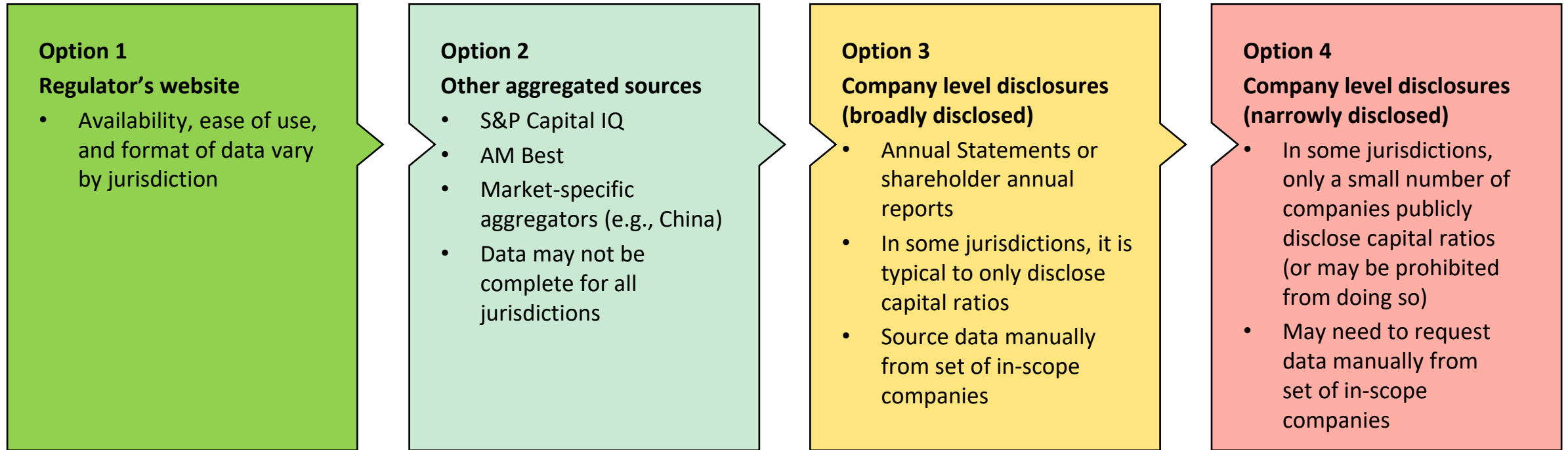
# DESIGN DECISIONS – RECAP

#	Topic	Decision point	What was done in 2015?	Proposed approach
1	Data collection & scope	Company scope	<ul style="list-style-type: none"> <li>Mix of company-level and full industry data</li> </ul>	<ul style="list-style-type: none"> <li>Full market, size-weighted, where available</li> <li>Representative companies</li> </ul>
		Level of first intervention	<ul style="list-style-type: none"> <li>200% ACL</li> </ul>	<ul style="list-style-type: none"> <li>To investigate both 200% &amp; 300%</li> </ul>
2	Methodology	Averaging approach	<ul style="list-style-type: none"> <li>Simple average, where company-level was used</li> <li>Size-weighted, where industry-level data used</li> </ul>	<ul style="list-style-type: none"> <li>Market aggregates/size-weighted</li> </ul>
		Length of time series	<ul style="list-style-type: none"> <li>Single year</li> </ul>	<ul style="list-style-type: none"> <li>3 years, where available</li> </ul>
		Single scalar vs. Life/Non-Life		<ul style="list-style-type: none"> <li>Life/Non-Life</li> </ul>
3	Ongoing updates	Frequency of updates		<ul style="list-style-type: none"> <li>3 years, or regime change</li> </ul>
		Triggers for regime change		<ul style="list-style-type: none"> <li>New solvency framework</li> <li>New regulatory intervention level</li> <li>Significant revisions to existing solvency framework</li> </ul>
		Process for regime change		<ul style="list-style-type: none"> <li>Year 0: Based on quantitative impact study (QIS) or company-data</li> <li>Year 1+: Based on years of reported data</li> </ul>
		Monitoring/flags		<ul style="list-style-type: none"> <li>Further investigation of large movements in capital ratios for a jurisdiction</li> </ul>

 Indicates that analysis included in following slides

# 1 DESIGN DECISIONS: DATA COLLECTION APPROACH

Data collection followed a tiered approach, with data from regulators being the preferred option



**Minimum data requirements** – (At least 5 years of historical data preferred, minimum of 3 years)

- Available capital
- Required capital
- Solvency ratio (for validation)
- Total assets

# 1 SUMMARY OF DATA COLLECTION BY JURISDICTION

Solvency data under Options 1 or 2 was available for most jurisdictions

Regime	Data source	Data granularity
US RBC <sup>1</sup>	Capital IQ	Company-level
EMEA <sup>1</sup>	Capital IQ	Company-level
UK	Regulator (Bank of England)	Industry aggregate
Australia	Regulator (APRA)	Company-level
Bermuda	Company filings	Company-level
Canada	Regulator (OSFI)	Company-level
Japan	Capital IQ	Company-level
Mexico	Company filings	Company-level

Regime	Data source	Data granularity
Singapore	Regulator (MAS)	Industry aggregate
Korea	Regulator (FSS)	Industry aggregate
Switzerland	Regulator (FINMA)	Company-level
South Africa	Capital IQ	Company-level
Hong Kong	Company filings	Company-level
China	Regulator (CBIRC)	Industry aggregate
Taiwan	Regulator (Insurance Bureau)	Company-level

**Option 1**  
Regulator's website

**Option 2**  
Other aggregated sources

**Option 3**  
Company level disclosures  
(broadly disclosed)

**Option 4**  
Company level disclosures  
(narrowly disclosed)

1. Broad regulatory data was available for the US and EMEA, but chose to use company-level data from Capital IQ instead for additional granularity



# 1 DESIGN DECISIONS: INTERVENTION THRESHOLD FOR US MARKET

Company distribution of scaled solvency ratios (capital weighted, 3-year time series) – EMEA & Japan

Regime	US intervention level (% ACL)	Scaled solvency ratio	Number of companies within each solvency bucket <sup>1</sup>				
			2018	2019	2020	2021	2022
US	200%	< 200%	1	0	0	0	0
		200% - 400%	11	10	14	10	15
		> 400%	38	40	36	40	35
	300%	< 200%	1	1	1	1	1
		200% - 400%	45	42	44	45	46
		> 400%	4	7	5	4	3
EMEA	200%	< 200%	2	2	4	1	3
		200% - 400%	22	22	21	22	22
		> 400%	24	26	25	27	24
	300%	< 200%	9	11	11	12	11
		200% - 400%	23	25	30	27	28
		> 400%	16	14	9	11	10
Japan	200%	< 200%	0	0	0	0	0
		200% - 400%	7	8	10	11	11
		> 400%	15	14	12	11	11
	300%	< 200%	1	1	1	1	1
		200% - 400%	17	17	18	19	20
		> 400%	4	4	3	2	1

There is a wide dispersion of solvency ratios for EMEA companies.

At a 300% ACL intervention level, about 20% of companies are below 200% solvency ratio.

For Japan, company solvency ratios are comparatively more concentrated. Almost all companies are above a 200% solvency ratio, regardless of where the US intervention level is set.

1. 50 largest US and EMEA companies (by assets) included as part of this exercise. Full scope of 22 Japanese companies included

## 2 DESIGN DECISIONS: AVERAGING APPROACH

Historical solvency operating levels by country – US, EMEA & Japan

Regime	Averaging method	2016	2017	2018	2019	2020	2021	2022
US RBC <sup>1</sup> (ACL)	Simple	2303%	2203%	2111%	2031%	2027%	2548%	2244%
	Median	986%	991%	903%	929%	943%	957%	902%
	Capital weighted	952%	929%	837%	859%	848%	878%	846%
EMEA <sup>1</sup>	Simple	257%	265%	269%	258%	254%	256%	264%
	Median	214%	218%	218%	214%	214%	215%	223%
	Capital weighted	240%	256%	263%	264%	251%	266%	261%
Japan	Simple	1211%	1161%	1149%	1150%	1109%	1089%	1012%
	Median	923%	945%	979%	984%	1009%	970%	963%
	Capital weighted	1017%	983%	991%	1029%	1038%	1049%	1025%

For US, use of simple average results in much higher capital ratio (due to upward outliers)

As a result, taking this approach would require their exclusion – adding an additional point of judgment

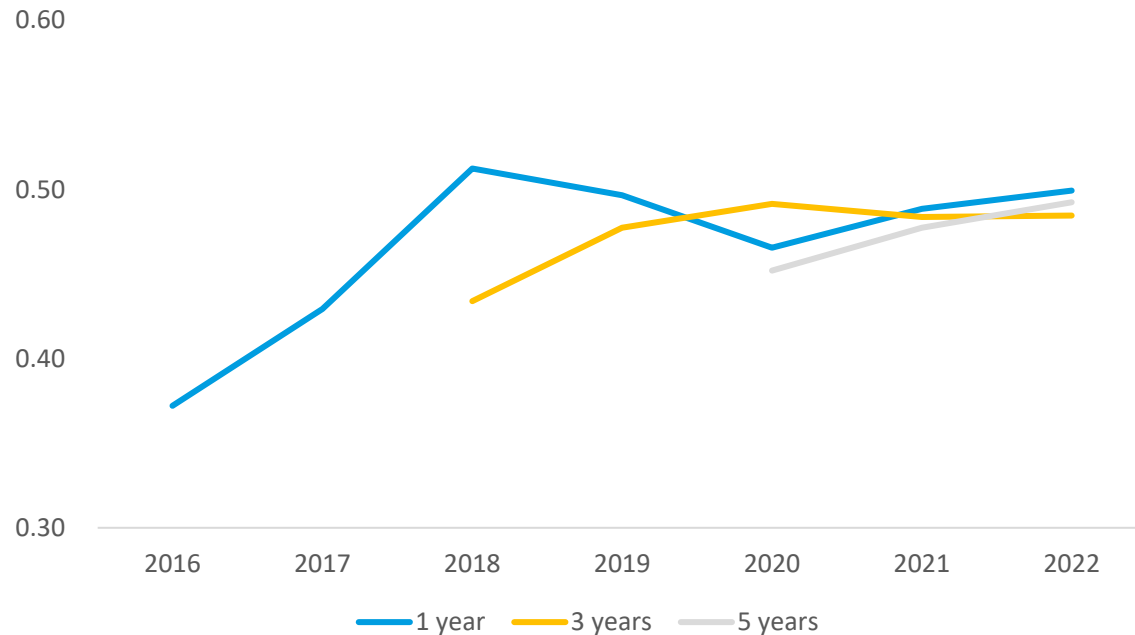
Capital-weighted view is equivalent to using market aggregates, and therefore can be applied even when only industry-level data is publicly available

1. Based on companies with assets over \$10M (USD) for each year

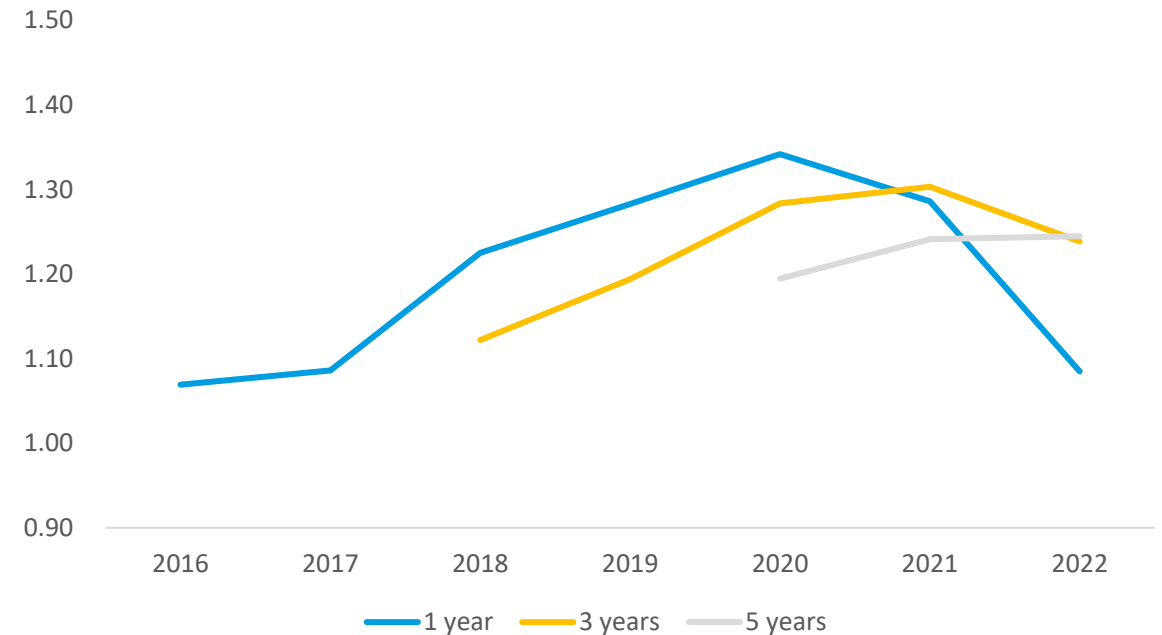
## 2 DESIGN DECISIONS: LENGTH OF TIME SERIES

ERR scalars (200% ACL) – EMEA & Japan

### EMEA



### Japan



Using a 3-year time series provides a balance between smoothing annual volatility in solvency ratios, while capturing overall trends in operating solvency levels.

3 years = Proposed approach

### 3 DESIGN DECISIONS: REGIME CHANGE TRIGGERS

## Triggers

If any trigger is met, then the regime change process is followed

1

#### New solvency framework

Introduction of a fully new solvency framework (e.g., Korea's adoption of K-ICS) automatically triggers regime change process; this criteria is not triggered by introduction of a new version (e.g., C-ROSS 2.0)

2

#### New regulatory intervention level

A change in the intervention level will automatically trigger the regime change process (e.g., Singapore RBC2), as it will affect scalars even absent other revisions to the solvency framework

3

#### Significant revisions to existing solvency framework

Policy changes to components of the existing solvency regime (such as risk factors, tax rates, correlation matrices, etc. ) that are expected to have an impact of 10%+ on industry-level solvency ratios; this trigger would apply based on both formal impact studies or the industry identifying triggering changes to the NAIC; **changes in market conditions (rates, spreads, equities, defaults) would not trigger an update**

### 3 DESIGN DECISIONS: REGIME CHANGE PROCESS

Scalar calculation process for initial year of new regime (when no historical data is available)

1

2

3

#### Industry-wide impact studies

- May be conducted by regulatory (preferred source) or industry group
- Calculated using consistent time periods (e.g., if impact study is from prior year, then prior year US RBC data used for calibration)
- **Example:** Korea K-ICS

#### Company-level data

- If impact study is unavailable or outdated (3 years+), company-level data can be used
- If sufficient share of industry (e.g. >50%) reports publicly, this data may replace use of an impact study
- Otherwise, this data may be used to roll-forward or validate continued applicability of an impact study
- **Example:** Japan ICS

#### Ad hoc analysis

- In certain instances, if neither an impact study nor company-level reporting is available, ad hoc analysis may be used to evaluate scalars
- **Example:** Changes to US tax rate

After the first year, the scalar is calculated based on reported data and rolls into three years of historical data (e.g., in first year after new regime adopted, one year of data is used for calibration; in second year, two years of data are used)

### 3 REGIME CHANGE EXAMPLE: SOUTH KOREA

Example of a regime change where industry-wide solvency reporting from South Korea’s regulator was used

- South Korea shifted to a new capital regime (“K-ICS”) beginning in 2023 from an RBC framework
  - Changes to regulatory invention point (150% to 100%)
- South Korea’s insurance regulator (the Financial Supervisory Service) publishes regular reports on the industry’s solvency ratios, including data before and after the shift to K-ICS
- To calibrate the ERR scalar under K-ICS, the Q2 2023 industry solvency ratio (with no transitional measures) of 196% was used
  - The scalar was calibrated without reflecting transitional measures to ensure consistent application across insurers
  - For purposes of group capital, we would expect the scalar to be applied to capital ratios before transitional measures
- The scalar will be updated using additional years of reported data under K-ICS as it becomes available

Historical life insurance companies’ solvency ratios:

	2019	2020	2021	2022	2023 Q1	2023 Q2
(A) RBC	285%	297%	254%	206%		
(B) K-ICS (no transitional measures)					193%	196%
(C) K-ICS (with transitional measures)					220%	224%
Difference vs. RBC without transitional measures (B – A)					-13%	-10%
Difference vs. RBC with transitional measures (C – A)					+14%	+18%

Source: Korea Financial Supervisory Service “Insurance Companies’ Capital Adequacy Ratios under K-ICS, June 2023”

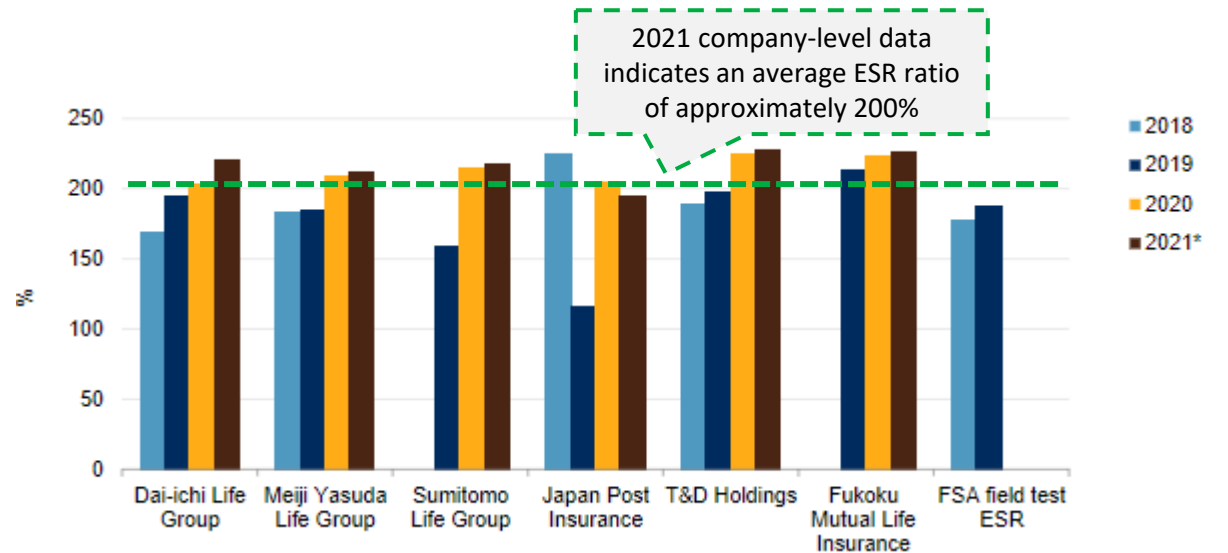
Used for initial calibration of scalar under K-ICS

### 3 REGIME CHANGE EXAMPLE: JAPAN

Illustration of how company-level data can be used in the absence of industry-wide studies

- Japan will be moving to a new economic value-based capital regime (“ESR”) beginning in 2025
  - Changes to regulatory invention point (200% to 100%)
- Japan’s insurance regulator (Financial Services Agency) conducts annual field tests to gauge the impact of the new regime
  - Most recent publicly released results date back to 2020
  - In 2020, industry-average ratio was 187%
- Several Japanese insurers voluntarily disclose ESR ratios; absent recent field test results, the NAIC can calibrate an initial ESR scalar based on company-level data
  - Company-level data shows a general upward trend with modest increases from 2020 to 2021
  - Overlaying this increase implies an industry ESR ratio of ~200%
- A 200% ESR ratio results in a Japan Life<sup>1</sup> ERR scalar of 0.30
- We expect that this analysis would be refreshed with more recent data when Japan moves to the ESR in 2025

Company-level ESR ratios



Fiscal years end March 31 of the following year. \*Data through to the end of the first half of fiscal 2021

Source: S&P Global Ratings

1. An update of the Japan Heath scalar was out-of-scope for this report; this scalar is addressed in a separate analysis presented by consultant Louis Felice, which derives scalar of approximately 0.21 by applying the same principles as the Life scalar.

### 3 REGIME CHANGE Q&A


- **What about instances where a regime change allows for early adopters?**
  - The NAIC could look at the planned adoption by the relevant companies, i.e., those US companies apply scalars for a specific jurisdiction to determine whether scalars are required under the prior and/or new regime(s)
  - If relevant companies are not all early adopters and therefore will continue to report under the existing regime, the scalar should be calibrated using only data for companies reporting under the existing regime
  - If relevant US companies are planning to adopt early, the regime change approach can be applied to develop a scalar prior to adoption deadline
  - If a mixture of approaches is taken in the industry, the NAIC may take both approaches. However, it may also exercise judgement around the materiality of the scalars (e.g., choosing to not update scalars for the existing regime if most relevant companies are early adopters)
- **What about transition periods?**
  - During a regime change, a transition period may allow for the grade-in of certain assumptions, provisions or other components in a manner that reduces the initial impact of a regime change
  - Treatment of such measures will need to be addressed on a case-by-case basis, considering factors such as whether the transition approach applies broadly or is subject to election and if it affects all companies in the same way (directionally)
  - For calibration of the Korea ICS scalar, data was available from the regulator for industry solvency ratios with and without transitional measures. The scalar was calibrated without reflecting transitional measures as a way to ensure consistency across insurers, regardless of whether they elected transitional measures
  - In some cases, it may be appropriate to simply follow the outlined regime change and recurring update process, and the impacts of transitional metrics will be graded in through that mechanism



### 3 PROPOSED PROCESS FOR ONGOING MONITORING

- Routine updates to scalars are expected to occur every ~3 years
- As part of the routine updates, a monitoring process can be used to identify when further review of a jurisdiction is required
  - Proposed threshold of **10% change in the industry-average capital ratio** for a given jurisdiction
  - Applies to industry-average capital ratios, not scalars
- If the threshold is met, further review should occur in order to:
  - Confirm data quality
  - Identify what factors are driving the change (economic conditions, refinements to capital regime, etc) and narrative around it
- Based on this review, the NAIC could determine whether an adjustment (e.g., using a shorter historical data period) is required

Regime	2019	2020	2021	2022	Comments
US RBC (ACL)	859%	848%	878%	846%	Large changes in 2022 reflect in part significant rate movements in several markets (incl. US and UK)
EMEA	264%	251%	266%	261%	
UK	157%	154%	163%	189%	
Australia	167%	177%	195%	199%	
Bermuda	290%	262%	238%	250%	
Canada	136%	140%	134%	130%	
Japan	1045%	1070%	1071%	901%	
Mexico	364%	329%	330%	411%	High volatility historically
Singapore	236%	186%	200%	216%	2020: RBC2
Korea (RBC)	285%	297%	254%	206%	
Switzerland	226%	216%	236%	243%	
South Africa	219%	216%	198%	208%	
Hong Kong	301%	286%	270%	246%	
China	241%	240%	223%	186%	2022: C-ROSS 2.0
Taiwan	314%	310%	340%	305%	

 = 10-15% movement vs. prior year (absolute basis)

 = Greater than 15% movement vs. prior year (absolute basis)

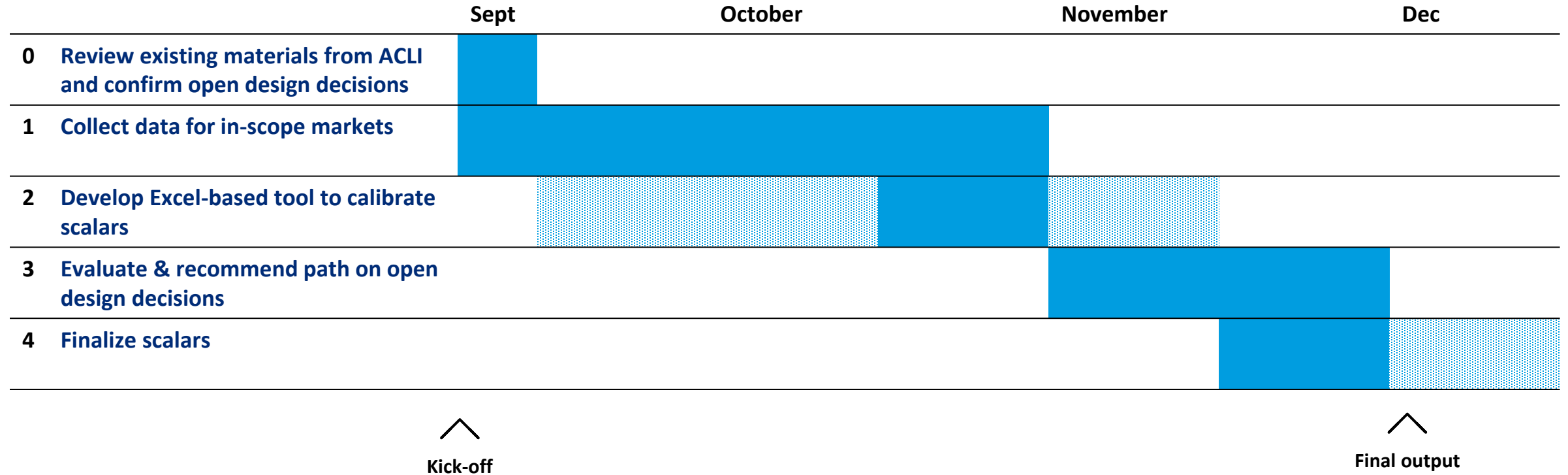
# **APPENDIX A**

## **PROJECT TIMELINE**

# PROJECT TIMELINE

Core effort spread over 3 months, with weekly touchpoints between Oliver Wyman and ACLI working group

## Timeline


















■ = Core focus  
▒ = Secondary focus / if needed













# **APPENDIX B**

## **PROCESS FOR DATA COLLECTION**



















# DATA FOR IN-SCOPE MARKETS (1 OF 3)

Country	Source identified?	Data acquired?	Intervention level?
<b>Australia</b>	 <ul style="list-style-type: none"> <li>Source: APRA website</li> <li>Scope: Full market (33 companies)</li> </ul>	 <ul style="list-style-type: none"> <li>Aggregate and company-specific data</li> <li>2008-2022</li> </ul>	 100% PCR (Increase supervision)
<b>Bermuda</b>	 <ul style="list-style-type: none"> <li>Source: Company-level disclosures</li> <li>Scope: Subset of market</li> </ul>	 <ul style="list-style-type: none"> <li>Acquired data for 21 companies making up 50% of Class E assets</li> <li>Challenges faced from limited company-level public reporting</li> </ul>	 100% ECR (to align with NAIC GCC instructions)
<b>Canada</b>	 <ul style="list-style-type: none"> <li>Source: OSFI website</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Aggregate and company-specific data</li> </ul>	 100% LICAT (Supervisory target that provides a cushion above minimum requirements)  <b>Regime change:</b> <i>LICAT introduced in 2018</i>
<b>Mexico</b>	 <ul style="list-style-type: none"> <li>Source: CNSF website</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Acquired data for 18 companies making up 86% of total industry assets</li> </ul>	 100% SCR (consistent with 2015 analysis)
<b>United States</b>	 <ul style="list-style-type: none"> <li>Source: Statutory filings via CapIQ</li> <li>Scope: Full market (legal-entity level)</li> </ul>	 <ul style="list-style-type: none"> <li>Legal-entity level data</li> <li>2015-2022 (earlier years available)</li> </ul>	 100% Company Action Level RBC (Company submits plan to regulatory)

# DATA FOR IN-SCOPE MARKETS (2 OF 3)

Country	Source identified?	Data acquired?	Intervention level?
<b>Solvency II (Europe)</b>	 <ul style="list-style-type: none"> <li>Source: Financial statements via CapIQ</li> <li>Scope: Close to full market</li> </ul>	 <ul style="list-style-type: none"> <li>Company-specific data</li> <li>Acquired data from CapIQ makes up ~90% of industry assets</li> </ul>	 100% SCR (Supervisory actions required to restore solvency level)
<b>Solvency II (UK)</b>	 <ul style="list-style-type: none"> <li>Source: Financial statements via CapIQ</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Company-specific data</li> </ul>	 100% SCR (Supervisory actions required to restore solvency level)
<b>Switzerland</b>	 <ul style="list-style-type: none"> <li>Source: FINMA website</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Historical industry-wide solvency ratios available</li> </ul>	 100% SST (Company submits an action plan)
<b>South Africa</b>	 <ul style="list-style-type: none"> <li>Source: Financial statements via CapIQ</li> <li>Scope: Subset of market</li> </ul>	 <ul style="list-style-type: none"> <li>Company-specific data</li> <li>Acquired data for top 5 companies making up ~80% of industry assets</li> </ul>	 100% SCR

# DATA FOR IN-SCOPE MARKETS (3 OF 3)

Country	Source identified?	Data acquired?	Intervention level?
<b>China</b>	 <ul style="list-style-type: none"> <li>Source: CBIRC website</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Historical industry-wide solvency ratios available</li> <li><b>Regime change to be graded in through regular updates</b></li> </ul>	 <p>100% Comprehensive Solvency Margin</p> <p><b>Regime change:</b> C-ROSS Phase II introduced in 2022</p>
<b>Chinese Taipei</b>	 <ul style="list-style-type: none"> <li>Source: Insurance Bureau website, company-level reporting</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Acquired data for 21 companies making up 98% of total industry assets</li> </ul>	 <p>200% RBC</p> <p>ICS-like regime to be introduced in 2026</p>
<b>Japan</b>	 <ul style="list-style-type: none"> <li>At least partially available from CapIQ</li> <li>Expect broadly available in annual reports and disclosures</li> </ul>	 <ul style="list-style-type: none"> <li>Acquired data for 22 companies from CapIQ making up close to 100% of industry assets</li> </ul>	 <p>200% SMR (Submission of business improvement plan)</p> <p>ICS-like regime to be introduced in 2025</p>
<b>Hong Kong</b>	 <ul style="list-style-type: none"> <li>No broad market data identified</li> <li>Operating company-level data not widely available</li> </ul>	 <ul style="list-style-type: none"> <li>Company-level reporting covers ~30% of the market (by assets)</li> <li>No participating companies indicated a need for Hong Kong scalar</li> </ul>	 <p>150% regulatory minimum capital (under HKIO)</p> <p><b>Post-2023:</b> 100% PCR (under HKRBC)</p>
<b>Singapore</b>	 <ul style="list-style-type: none"> <li>Source: MAS regulator website</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Historical industry-wide solvency ratios available</li> </ul>	 <p>100% CAR<sup>1</sup></p> <p><b>Regime change:</b> RBC 2 introduced in 2020</p>
<b>South Korea</b>	 <ul style="list-style-type: none"> <li>Source: FSS regulator website</li> <li>Scope: Full market</li> </ul>	 <ul style="list-style-type: none"> <li>Historical industry-wide solvency ratios available</li> <li>To be treated as regime change. <b>No transitional measures as tentative approach</b></li> </ul>	 <p>2022 and prior: 100% RBC (to align with NAIC GCC instructions)</p> <p>2023 onwards: 100% K-ICS</p> <p><b>Upcoming regime change:</b> Shift to K-ICS</p>

1. NAIC GCC instructions use 120% CAR as intervention level. However, this was likely based on the previous RBC regime for Singapore

# **APPENDIX C**

## **SOLVENCY OPERATING LEVELS BY COUNTRY**



# HISTORICAL SOLVENCY OPERATING LEVELS BY COUNTRY

Regime	2014	2015	2016	2017	2018	2019	2020	2021	2022
US RBC (%ACL)	972%	964%	952%	929%	837%	859%	848%	878%	846%
EMEA			240%	256%	263%	264%	251%	266%	261%
UK					154%	157%	154%	163%	189%
Australia					179%	167%	177%	195%	199%
Bermuda					298%	290%	262%	238%	250%
Canada					138%	136%	140%	134%	130%
Japan <sup>1</sup>	1010%	955%	1004%	991%	981%	1045%	1070%	1071%	901%
Mexico					215%	364%	329%	330%	411%
Singapore					236%	236%	186%	200%	216%
Korea					271%	285%	297%	254%	206%
K-ICS									196% <sup>2</sup>
Switzerland					219%	226%	216%	236%	243%
South Africa					238%	219%	216%	198%	208%
Hong Kong					296%	301%	286%	270%	246%
China					235%	241%	240%	223%	186%
Taiwan					306%	314%	310%	340%	305%

1. Japanese insurers' financial reporting cycles end in March. Solvency ratios used for calibration are on a calendar year basis to align with other countries' financial reporting cycles

2. Based on Q2 2023 industry K-ICS ratio with no transitional measures

# **APPENDIX D**

**COUNTRY-SPECIFIC DETAILED ANALYSIS**

# COUNTRY-SPECIFIC DETAILED ANALYSIS – AUSTRALIA

- Example of a best-case scenario for data collection
- Regulator website includes database of key financial metrics for life insurers (2008 – 2022):
  - Total assets
  - Eligible capital
  - Prescribed capital amount

## Australia life insurance industry statistics (2020-2022)

<i>AUD billions</i>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Assets</b>	129.6	130.4	121.4
<b>Eligible capital</b>	17.2	17.0	15.5
<b>Prescribed capital amount</b>	9.7	8.7	7.8
<b>Industry solvency ratio</b>	177%	195%	199%

# COUNTRY-SPECIFIC DETAILED ANALYSIS – BERMUDA

- Gathering complete data for the Bermuda life insurance industry has been challenging:
  - Aggregate industry solvency metrics unavailable from Bermuda Monetary Authority (BMA) website
  - Company-level information unavailable from CapIQ or AM Best
  - Company-level reporting also difficult to obtain in many cases<sup>1</sup>

## List of life insurers from AM Best, as well as companies with filings on BMA website:

Company	Total Assets (\$ billions)	Solvency Ratios		
		2022	2021	2020
Athene Life Re	103	252%	209%	252%
RGA Americas Reinsurance Company Ltd	55	n/a	n/a	n/a
Global Atlantic	46	221%	257%	280%
Resolution Re	45	216%	227%	198%
Fortitude Re	43	174%	226%	228%
Legal & General Re	30	359%	332%	303%
Wilton Re	20	226%	256%	298%
Monument Re	17	167%	299%	473%
MetLife Reinsurance Co of Bermuda Ltd	16	n/a	n/a	n/a
Talcott Life Re Ltd	14	224%	288%	n/a
Partner Re Bermuda	12	256%	253%	258%
Gibraltar Re	11	n/a	n/a	n/a
Transamerica Life (Bermuda) Ltd	10	1209%	409%	529%
Somerset Reinsurance Ltd	5	356%	319%	313%
Pacific Life Re International Limited	5	265%	316%	251%
Aspida Life Re	4	207%	181%	n/a
Kuvare Life Re	3	262%	234%	358%
Athora Life Re Ltd	3	210%	227%	328%
Union Hamilton Re	2	n/a	n/a	n/a
RGA Global Reinsurance Company, Ltd	2	n/a	n/a	n/a
Oceanview Reinsurance Ltd	2	268%	259%	313%
AIG Life of Bermuda, Ltd	2	n/a	n/a	n/a
Liberty Re (Bermuda)	1	177%	197%	301%
Legal & General Reinsurance Co No.2 Ltd	0	409%	344%	n/a
<b>Total</b>	<b>452</b>			

## Aggregate data from 2022 BMA Annual Report:

Class of Insurer	No. of Licences	Gross Premiums (USD)	Net Premiums (USD)	Total Assets (USD)	Capital and Surplus (USD)
Class 1	169	2,333,121,374	1,960,081,842	18,120,135,559	13,925,207,443
Class 2	252	9,498,102,449	8,066,400,503	63,345,613,144	35,730,173,982
Class 3	190	16,440,071,299	11,653,073,128	63,278,503,798	21,589,610,070
Class 3A	119	27,087,153,507	19,264,620,994	67,539,789,913	27,566,198,558
Class 3B	27	8,927,141,999	7,265,021,165	46,907,810,721	21,237,052,202
Class 4	43	58,502,015,601	46,013,313,223	227,240,574,360	104,984,802,347
Class A	8	604,639,989	52,566,710	5,372,222,168	2,395,591,606
Class B	13	253,438,367	232,202,287	434,592,676	135,035,648
Class C	83	33,837,732,669	28,170,116,213	181,442,799,399	15,974,725,727
Class D	8	133,447,700	68,150,111	5,768,984,906	415,513,064
Class E	57	102,053,255,694	72,674,834,270	882,284,687,276	111,468,818,626
SPI	178	7,506,492,342	6,893,620,640	66,494,362,649	13,979,631,708
Collateralized	7	964,162,294	433,544,022	5,419,541,608	1,302,640,755
<b>Total</b>	<b>1,154</b>	<b>268,140,775,285</b>	<b>202,747,545,107</b>	<b>1,633,649,618,176</b>	<b>370,705,001,734</b>

Companies included in our list make up 51% of total Class E insurer assets. Removing those where solvency data is unavailable, the 51% drops to 41%

1. Following the October 12, 2023 meeting, RGA provided company-level solvency reports to be included as part of the Bermuda dataset  
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# COUNTRY-SPECIFIC DETAILED ANALYSIS – CANADA

- Canadian insurance regulator (OSFI) website has detailed financial information available on a company-by-company basis, as well as on an aggregate basis
- Various entity splits are available:
  - Domestic vs. Foreign
  - Life vs. Fraternal
- **Our proposed approach for company inclusion is to include the total market**, including foreign and fraternal companies
  - Most comprehensive view of Canadian insurance industry solvency
  - Solvency levels not materially different between Total view and Canadian/Life-only view
  - Confirmed that supervisory intervention levels are the same between LICAT and LIMAT

	Assets	LICAT/LIMAT Total Ratio				
	(2022, CAD 000s)	2018	2019	2020	2021	2022
Canadian, Life	1,704,022,528	1.39	1.37	1.40	1.34	1.29
Canadian, Fraternal	17,919,436	1.53	1.72	1.91	1.65	1.65
Foreign, Life	21,284,756	1.29	1.26	1.35	1.31	1.28
Foreign, Fraternal	3,928,927	1.91	1.43	1.30	2.05	2.48
<b>Total</b>	<b>1,747,155,647</b>	<b>1.38</b>	<b>1.36</b>	<b>1.40</b>	<b>1.34</b>	<b>1.30</b>

# COUNTRY-SPECIFIC DETAILED ANALYSIS – CHINA

## Discussion on approach for C-ROSS Phase 2 regime change

- China shifted from their previous capital regime C-ROSS Phase 1 to C-ROSS Phase 2 beginning in 2022
  - The regulator is granting insurers up to 3 years to apply transitional measures
- Capital required under C-ROSS Phase 2 is expected to be higher than under Phase 1 for life insurers, although impact to comprehensive solvency ratio appears low
  - No impact studies were identified
  - Industry-level reporting does not include overlapping period
  - Greater impact to core ratio due to caps implemented on amount of future profits recognizable as Tier 1 capital
  - Industry impacts expected to be larger for non-life insurers

**Proposed approach (for discussion today): Given modest impact to relevant ratio for GCC and 3-year transitional period, allow changes to be captured via regular scalar updates**

## Solvency ratios for select large Chinese life insurers before and after C-ROSS Phase 2:

	Comprehensive Solvency Ratio (relevant ratio for GCC purposes)			Core Solvency Ratio (focuses on Tier 1 capital)		
	Q4 2021 (under C-ROSS Phase 1)	Q1 2022 (under C-ROSS Phase 2)	Difference	Q4 2021 (under C-ROSS Phase 1)	Q1 2022 (under C-ROSS Phase 2)	Difference
<b>China Life</b>	262%	248%	<b>-14%</b>	254%	176%	<b>-78%</b>
<b>China Pacific</b>	218%	247%	<b>+29%</b>	218%	147%	<b>-71%</b>
<b>Ping An</b>	233%	236%*	<b>+3%</b>	229%	179%	<b>-50%</b>
<b>AIA</b>	Annual report noted that the impact of C-ROSS Phase II was insignificant					

\*As at Q2 2022

Source: Company public filings

# COUNTRY-SPECIFIC DETAILED ANALYSIS – MEXICO

## Proposed approach for company data inclusion

- Industry-wide solvency ratios for Mexico are available, but it is unclear how the ratios were derived
  - Average vs. median solvency ratios
  - Only 3 years of ratios available, rounded to nearest 10%
  - Inconsistent with company-level data
- The Mexican regulator (CNSF) website also publishes insurer solvency ratios, but not required and available capital
- Analysis of the company-level data reveals data concerns
  - Volatile historical solvency ratios
  - Some data outliers, which skew industry-level
  - Not all ratios can be confirmed through public solvency reports

**Our proposed approach for Mexico is to include a subset of the total market, where ratios can be confirmed through company public reports**

Data for 10 largest Mexican life insurers from AM Best:

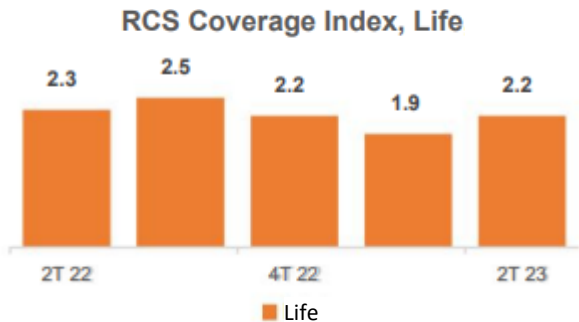
	2022 Total Assets (USD 000s)	SCR Coverage Ratio				
		2022	2021	2020	2019	2018
Pensiones Banorte	12,182,428	1075%	734%	713%	2940%	2877%
Grupo Nacional Provincial	10,164,421	217%	247%	284%	236%	146%
BBVA Seguros México	9,266,393	257%	221%	238%	206%	398%
BBVA Pensiones México	7,825,955	391%	510%	873%	1170262%	1406224%
MetLife México	7,247,672	528%	331%	340%	406%	188%
Citibanamex Seguros	7,192,095	416%	404%	232%	408%	132%
Seguros Monterrey New York Life	7,157,593	288%	272%	290%	374%	188%
Profuturo Pensiones	5,116,091	274%	364%	117%		
AXA Seguros	4,405,400	246%	272%	301%	275%	
Seguros Inbursa, S.A.	4,054,853	443%	342%	250%	261%	148%

Source: Solvency ratios obtained from CNSF website <https://informacionfinanciera.cnsf.gob.mx/>

Significant volatility observed in reported solvency ratios

Outliers present in data that skew averages

Mexican life insurance industry-wide solvency ratios:

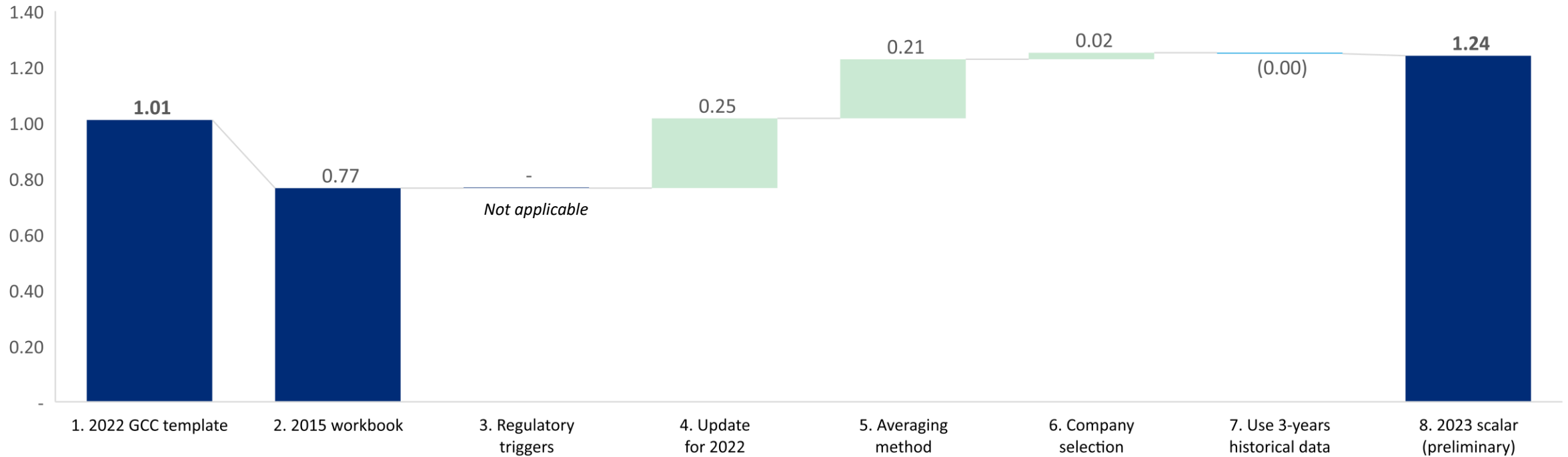


Source: CNSF "Analytical Overview of the Sector June 2023"

# COUNTRY-SPECIFIC DETAILED ANALYSIS – JAPAN

## Reconciliation of ERR scalar (200% ACL) from 2015 exercise to current

- The difference between the 2015 ERR scalar for Japan and the scalar calculated under the current proposed approach can be broken down into a number of steps:



- 1** Japan Life ERR scalar from 2022 GCC template (200% ACL)
- 2** Scalar from 2015 workbook
- 3** Update for any changes in regulatory intervention levels (none needed)
- 4** Update operating ranges to use 2022 solvency ratios

- 5** Update for averaging method (simple average to weighted market)
- 6** Update company selection (from market subset to full market)
- 7** Update time series length from 1 year to 3 years (average)
- 8** 2023 scalar under current proposed methodology



# **APPENDIX E**

## **OLIVER WYMAN CONTACT INFORMATION**

# CONTACT INFORMATION



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## GROUP CAPITAL CALCULATION – JAPAN HEALTH SCALARS REFRESH REPORT TO NAIC

### **Executive Summary**

An updated health scalar under the existing excess relative ratio (ERR) method is proposed herein for health insurers operating in Japan. In July 2023, NAIC adopted the ERR method as the sole scalar method in the GCC and upon review has also moved the scalars from “sensitivity analysis” to the base GCC Ratio calculation. Utilizing the same framework as the 2019/2020 health scalar development, a scalar of .89 is being proposed for use in the base capital ratio reported in the 12/31/2023 Group Capital Calculation (GCC) template replacing the .71 scalar currently included in the GCC template. This is directly proportional to the increase observed for the 2023 Japan life scalar calibration. Additionally, an initial projected scalar of .21<sup>1</sup> is being proposed under the capital regime change to occur in Japan effective April 1, 2025. The proposed health scalars for both current regime and projected under regime change were adjusted from the life insurance ERR scalars proposed in the accompanying report from Oliver Wyman. The best estimate projected scalars of .30 for life and .21 for health are preliminary and should be reviewed further as additional data becomes available. The Oliver Wyman report presents the methodology and process for periodically updating scalars with work focused on life insurance scalars only. The data included in the calculations attached for the proposed health scalars used the same data periods through 12/31/2022 applied by Oliver Wyman to develop the Japan life scalars with adjustments for health solvency requirements. Per the NAIC Group Capital Calculations Instructions, the Japan health scalar may be used by insurers whose insurance health business (referred to as “Third Sector”) comprise greater than sixty percent of all insurance lines underwritten, reflected by annualized premium.

### **Background:**

The group capital calculation (GCC) template and instructions were formally adopted by the NAIC members in 2021 and are maintained each year by the NAIC. Scalars are included to compare insurance capital requirements of non-U.S. jurisdiction to U.S. Risk-based Capital (RBC) requirements. Prior to the 2023 version of the GCC template, the scalars were included in the template as part of “sensitivity analysis.” The current scalars for life insurers and property and casualty insurers were developed by the NAIC based on available public data from jurisdictions for reporting years 2015 and 2016. After consultation with NAIC staff, scalars for insurers writing a predominant amount of business in Japan’s Third Sector were presented to NAIC by AFLAC, assessed by NAIC staff, and introduced in 2020 as part of the development of the GCC. The Japan health scalars were developed by adjusting the scalars for life insurers using data provided by AFLAC, who is organized as a life insurer and the industry leader

in Japan's Third Sector. Both Life and Non-Life insurers in Japan may write health or related insurance in the Third Sector. The data used to develop the proposed life scalars for Japan includes health business similar to the data used for the Japan scalars in the current GCC template.

The updated health scalars presented above were derived using the same methodology framework used in 2019/2020 starting with the life scalar developed by the NAIC for Japan (and now as updated in the accompanying Oliver Wyman report) and then adjusted for several factors.

**Regime Change:**

The current Japanese insurance capital regime includes a Solvency Margin Ratio (SMR) calculated in a way much closer to U.S. RBC. Reported weighted average solvency ratios in Japan are historically higher than reported U.S. RBC ratios for life insurers. This can result in a scalar greater than 1 as is the case for the proposed Japan Life Scalar of 1.24. Effective in fiscal year 2025, this will change to an Economic Solvency Ratio (ESR) regime with required capital calculated in a way closer to the Solvency II regimes used in the United Kingdom and European Union. Based on an impact study by the Japan Financial Services Authority in 2020 and other available information the targeted solvency ratios will be significantly lower than weighted average U.S. RBC ratios under the ESR regime (See Oliver Wyman report). This results in a scalar much lower than 1 as is the case for the tentative projected Japan Life Scalar of .30.<sup>1</sup> Absent adoption of revised scalars, group capital ratios reported in the GCC for life and health insurers operating in Japan will be severely impacted.

As with the initial GCC scalars development, the projected health scalar for the GCC upon and after regime change in Japan should be reviewed in conjunction with the life scalar for Japan. For example, the life scalar would be updated first (if necessary) and then the adjustments described below applied to the life scalar to calculate a health scalar. The Oliver Wyman report includes guidance for such a process for the life scalar.

**Methodology (See Appendix attached):**

Starting with the life insurance ratios included in the accompanying Oliver Wyman report and using updated data provided by AFLAC through 12/31/22, the scalars for life insurers were adjusted based on two broad concepts:

1. The stringency of current Japanese solvency standards on health ("Third Sector") vs. life ("First Sector") business. AFLAC data indicates a materially higher level of capital stringency (capital devoted to Third Sector business) compared to its First Sector business.

2. The proportion of Third Sector to First Sector insurance written by AFLAC vs. a typical Japanese life insurer. AFLAC's Japan premium profile is approximately 75% health and 25% life. This is roughly the opposite of a typical Japanese life insurer.

The adjustments result in a factor of .72 applied to the Japan life scalar. Based on historical data, both above conditions are expected to remain constant over time and across regime change.

**Adjustment steps to determine a Japan health scalar:**

- a. Allocate available capital to the First Sector and Third Sector based on insurance liabilities attributable to each sector.
- b. Use actual SMR filings to establish required capital specifically attributed to the First Sector and Third Sector.
- c. Calculate a solvency ratio for each sector by dividing the results under a., by those under b., above.
- d. Using the solvency ratios calculated under (c), an adjustment factor for health vs. life SMR required capital was derived. The resulting .72 factor was then selected based on the split in annualized premium between Third and First sectors. The factor is applied to the life ERR scalar which produces the proposed 0.89 Health scalar (0.72 adjustment factor x 1.24 life scalar).

**Additional Information:**

Weighted average Japan solvency ratio data for life insurers used for both this report and by Oliver Wyman indicate an approximately 15% drop in the ratios in calendar 2022 compared to both 2021 and 2020. This may have to do with market conditions in Japan such as higher bond yields impacting investments. However, there can be other changes in play related to implementing a new regime or other policy change that result in a material change in the solvency ratio. The potential persistency of this directional in Japan should be investigated, and a potential update to the 1.24 and .89 respective proposed scalars for life and health as of 12/31/23 scalars considered for the 12/31/2024 GCC. Moving from the one data year approach adopted by the NAIC in the current GCC template to the rolling 3-year process with exceptions described in the Oliver Wyman report is reasonable. It may be that where there is a meaningful change in the reference jurisdiction's solvency ratio, particularly in the final year of the 3-year evaluation period, an updated review can be considered. Such is the case for Japan with the weighted average decrease of 15% noted earlier herein.

Example: Using 2022 data alone would have generated a life scalar of 1.05 (.76 for health) for Japan.

**Recap:**

- A scalar of .89 is proposed for use in the base capital ratio reported in the 12/31/2023 Group Capital Calculation (GCC) template, assuming a Q1 2024 approval. Additionally, an initial projected scalar of .21<sup>1</sup> is being proposed under the capital regime change to occur in Japan in 2025.
- In July 2023, NAIC adopted the ERR method as the sole scalar method in the GCC and upon review has also moved the scalars from “sensitivity analysis” to the base GCC Ratio calculation.
- The projected health scalar for the GCC upon and after regime change in Japan should be reviewed in conjunction with the life scalar for Japan using updated information.
- The adjustments to a Japan life scalar to arrive at an appropriate health scalar is expected to remain constant over time and upcoming regime change.
- An observed directional change in the Japan 2022 solvency ratio should be investigated and an update to the 1.24 and .89 respective proposed scalars for life and health as of 12/31/23 scalars considered for the 12/31/2024 GCC.

2023 GCC  
Japan Health  
Scalar  
Calibration  
1/3/2024

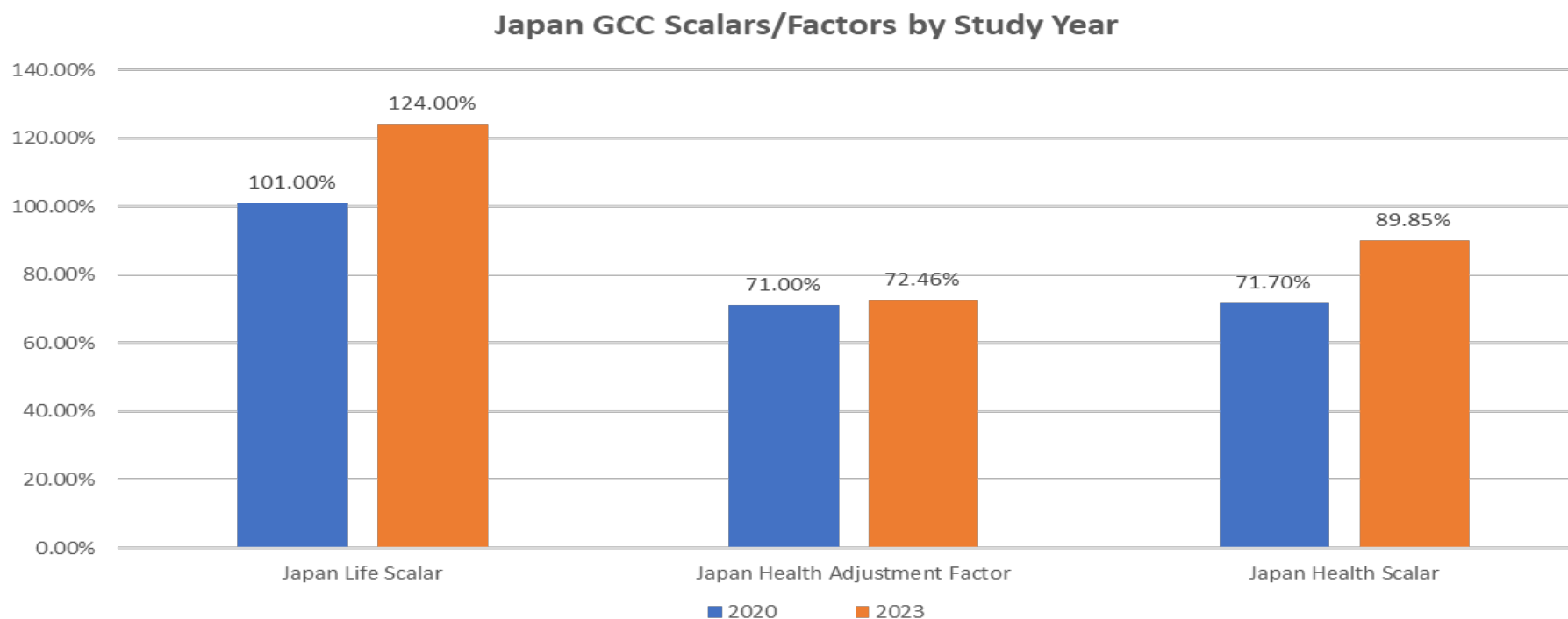
Appendix to Japan Health Scalar Report

- Louis Felice
  - Consultant
- 



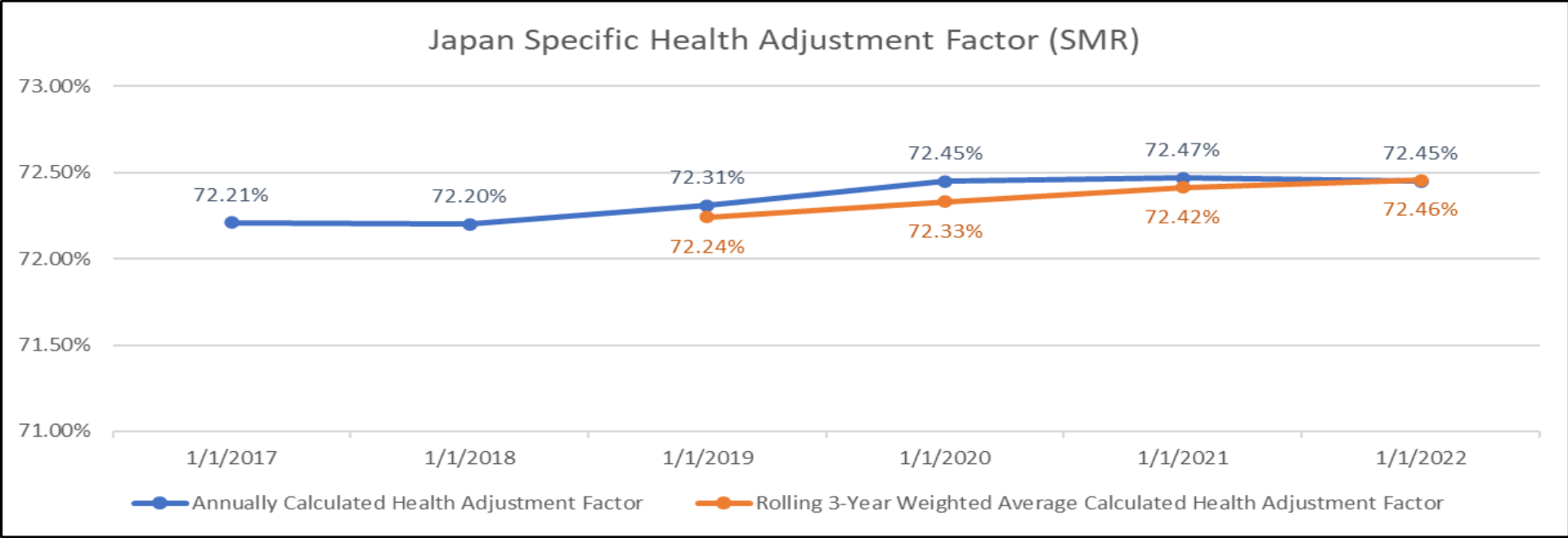
# Japan GCC Scalar Comparison

- ❑ The current GCC Japan Life Scalar saw a significant increase from 101% to 124% in the current analysis.
  - No alterations to the Life Scalar have been made, and Japan life Insurers rely upon the work performed by the ACLI/OW in its derivation.
- ❑ The health adjustment factor produced in this 2023 analysis closely resembles the previous factor produced in 2020.
- ❑ The resulting Japan Health Scalar saw a significant increase from 71.70% to 89.85%.
  - The movement is dependent and consistent with the increase in the Japan Life Scalar.



# Proposed Japan Specific Health Adjustment Factor (2023)

- ❑ A proposed Japan Health Adjustment Factor based on company specific data utilizing a Calendar Year-End rolling 3-year weighted average to align with the methodology and data structure proposed by the ACLI/OW for the Japan Life Scalar.
- ❑ The analysis produces a 72.46% Adjustment Factor that can be applied directly to the proposed Japan Life Scalar similar to the previously adopted methodology and scalar.
- ❑ Similar to the prior study/methodology, the final proposed factor will be rounded to the nearest percentage point; 72%.
  - Rounding has no material impact on the resulting scalar.



# Japan Sector Weight Analysis Refresh

- ❑ Japan's Industry mix can be materially different and may not be representative of all companies individually within the industry. The Japan Life Scalar may not be applicable to a company that exemplifies a material difference in business mix compared to the industry.
- ❑ It would be appropriate to apply the proposed health scalar methodology to any company whose insurance profile consists of more than 60% of annualized health premiums in the health line of business.
- ❑ The company specific analysis below shows a material and stable difference in business mix compared to the industry.
- ❑ Additionally, the company specific data below meets the necessary minimum requirements for use of the Japan Health Scalar.

