Comparative analysis of Asia's life insurance capital regimes and implications

Joint Regional Seminar 2019

<Milliman>

JULY / AUGUST 2019

Future developments – RBC regimes across Asia

China
CBIRC is currently reviewing C-ROSS formulae and parameters.

South Korea
The FSS plans to adopt K-ICS, a principle-based RBC framework, by 2022.

Japan
The FSA is contemplating the introduction of an economic value-based solvency regime.

India
The IRDAI is contemplating the introduction of a RBC regime.

Hong Kong
Target to launch a RBC framework by 2021. QIS 3 to be launched by Q3 2019.

Malaysia
BNM initiated a review of its current RBC framework, which has been conducted in phases since 2018.

Taiwan
Expected to move to an ICS based regime.

Singapore
RBC 2 will be effective from 1 January 2020.

Thailand
Target to implement RBC 2 two years after IFRS 17 is effective.

Our research report on RBC regimes across Asia

- Milliman will be publishing a research report shortly, focusing on a **comparative analysis of the RBC regimes** and **implications** behind the changes:

Overview of current and upcoming developments

The current status by Asian countries and their known future developments.

Comparison of technical specifications

How assets and liabilities are valued, capital requirement determination and more.

Key capital results analysis

Operations in which country are more "solvent" than the others and the risks facing these companies.

Conclusion and implications

Potential impact to companies and things to do.

Summary Report

- A Summary Report of this research can be downloaded at:

QR code to be provided in final deck after the conference

Agenda

1. Capital regimes in Asia
2. Comparative analysis of results
3. Implications

Capital regimes in Asia

- Differences, similarities and trends

Applicable capital regimes in Asia

Factor-based

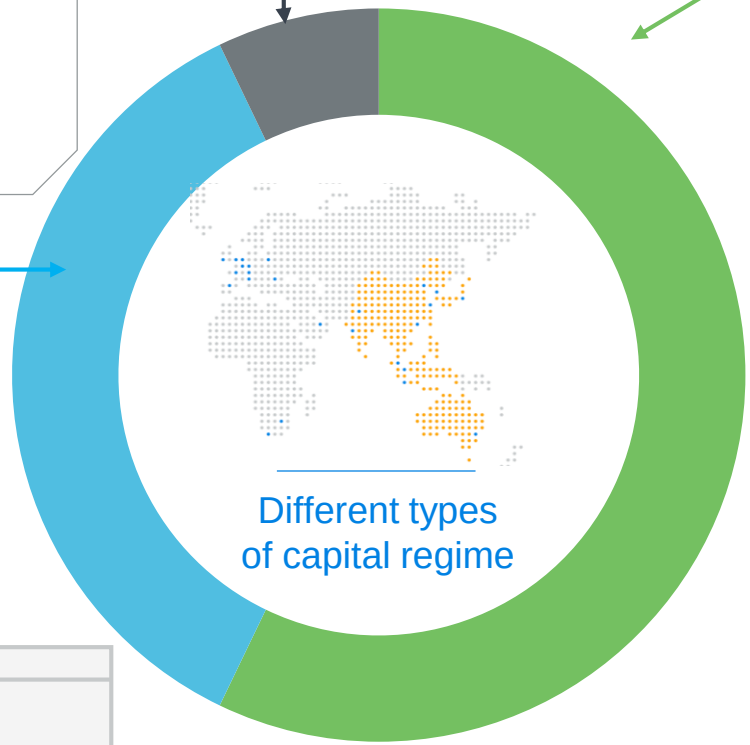
- India
- Hong Kong (existing basis)

$$Capital = ax + by$$

Factor-based (US risk-based)

- Japan (regulatory)
- South Korea RBC
- Taiwan RBC
- Bermuda BSCR
- US RBC

C1	*Asset Risk*
C2	*Insurance Risk*
C3	*Interest Rate Risk*
C4	*Business Risk*
	$(C4 + \sqrt{(C1 + C3)^2 + C2^2})^3$



Risk-based

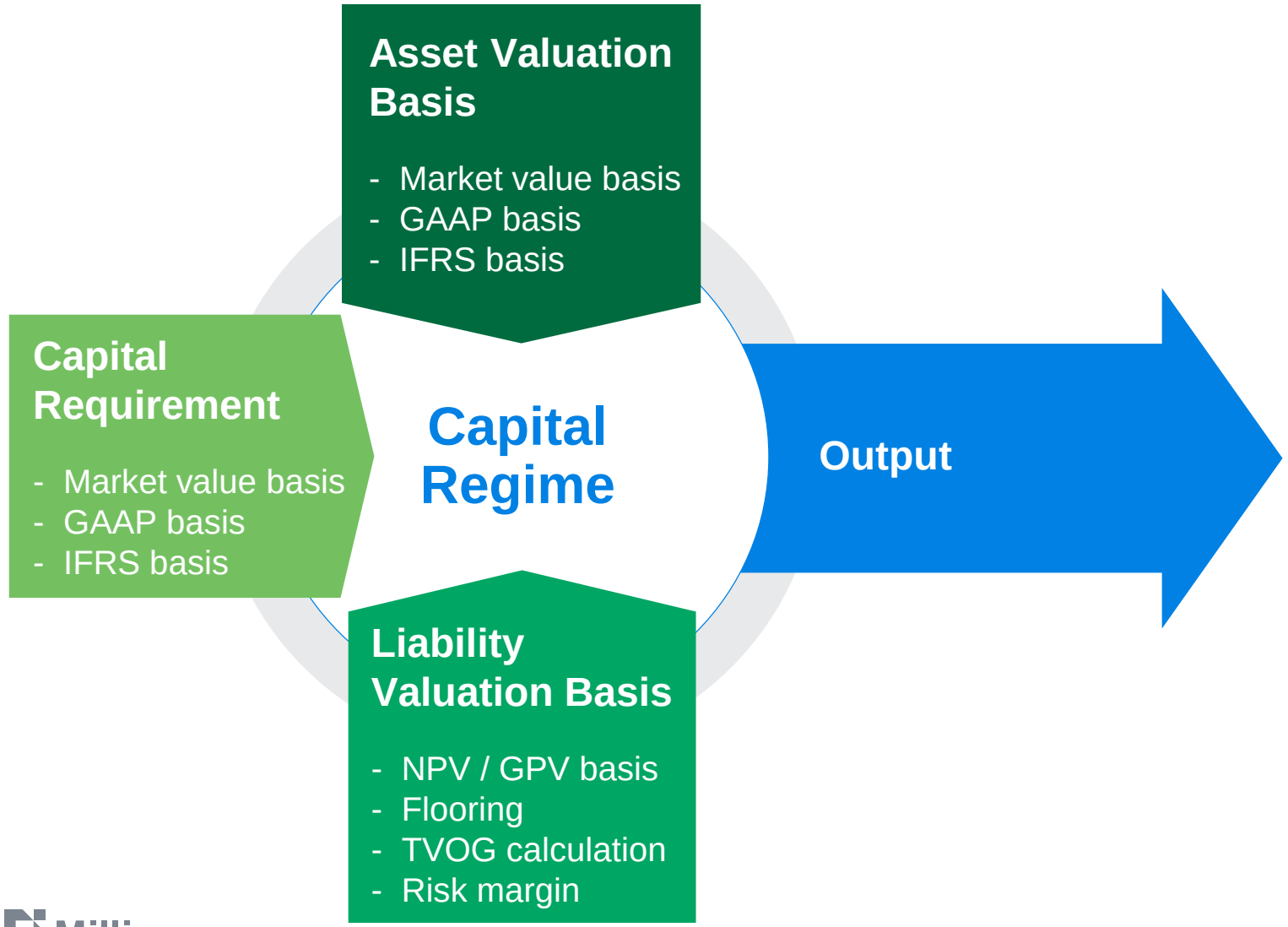
- China C-ROSS
- Hong Kong RBC (QIS 2)
- Indonesia RBC
- Malaysia RBC
- Singapore RBC 2
- Thailand RBC 2 (95th percentile)
- Solvency II
- Canada LICAT

Use of Internal Model

- Internal Model is allowed
- Internal Model is only allowed for a few particular products or components

Milliman

Key components under quantitative requirements



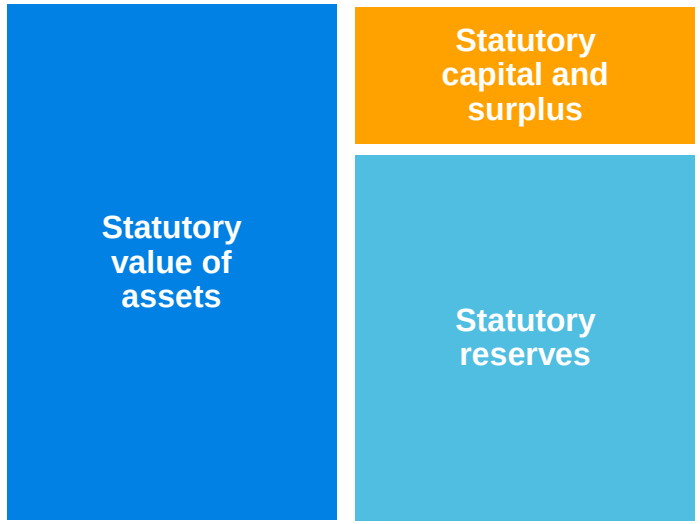
- Solvency Position
- Economic Balance Sheet
- Other management information (e.g. Risk Profile)

Key components under quantitative requirements

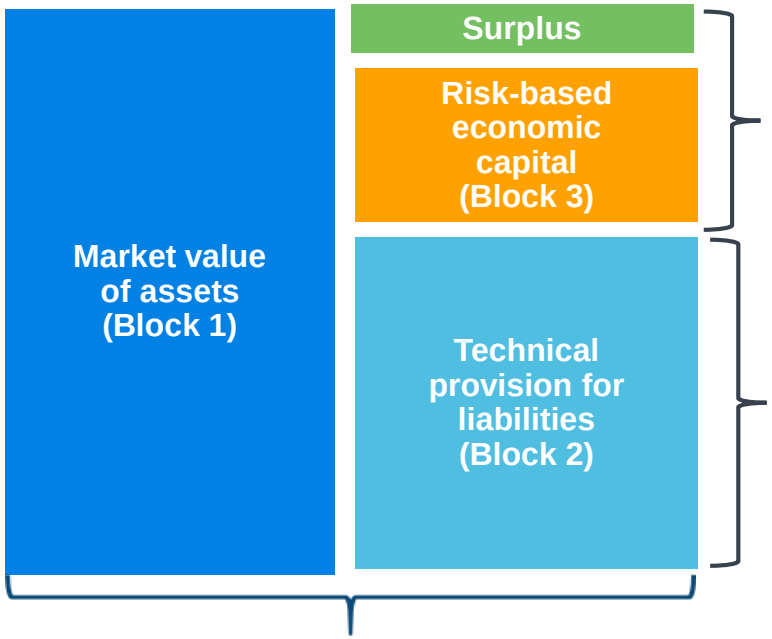
Statutory balance sheet versus Economic balance sheet

- Assets and liabilities should be valued on a **consistent economic basis** leading to a reduction or elimination, where possible, of **accounting mismatches** where no underlying economic mismatches exist, thereby providing a more accurate picture of a company's solvency position.

Statutory balance sheet



Economic balance sheet



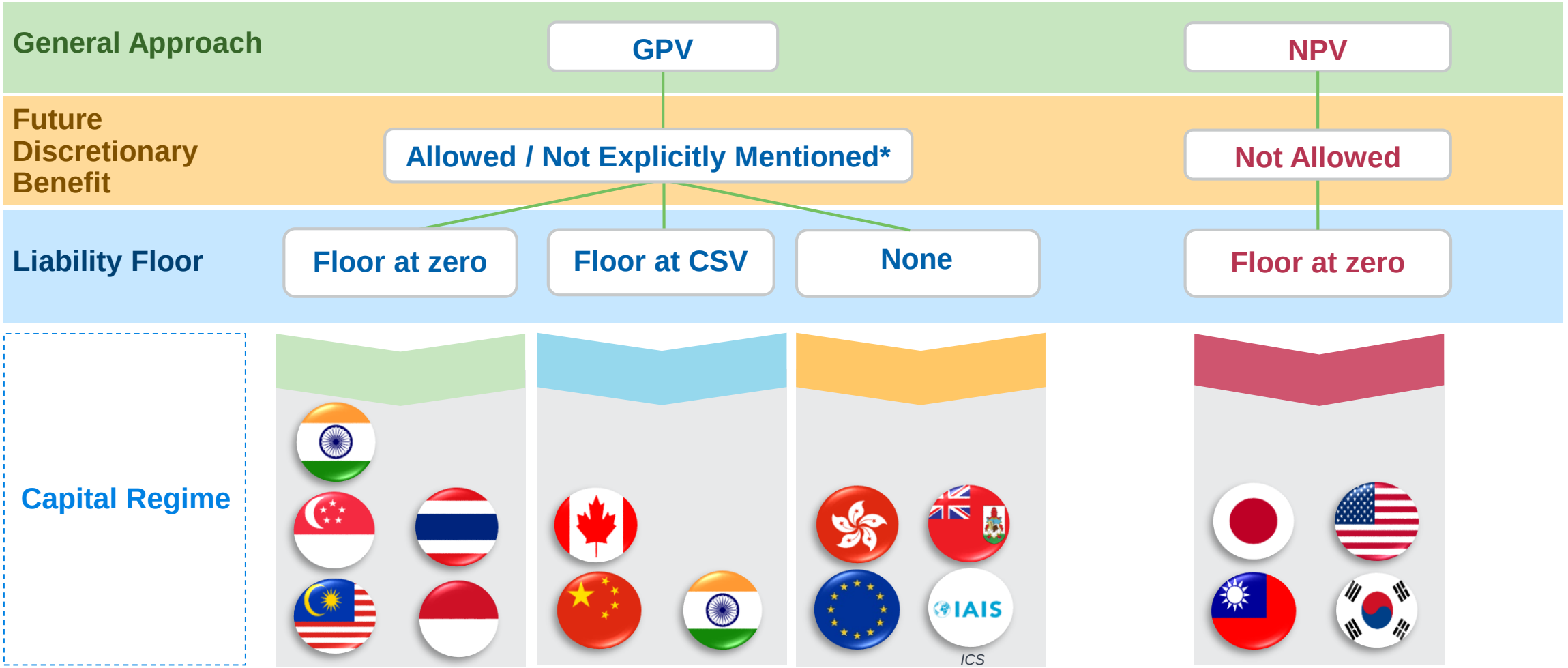
The available economic capital is the surplus of assets over and above liabilities derived from an economic balance sheet.

Economic valuation of liabilities
= best estimate of liabilities
+ risk adjustment
+ time value of options and guarantees

Fair value of assets and liabilities

Liability valuation basis

Approach to evaluate deterministic insurance liabilities



*Thailand RBC 2 (95TH PERCENTILE) & Canada LICAT

Liability valuation basis

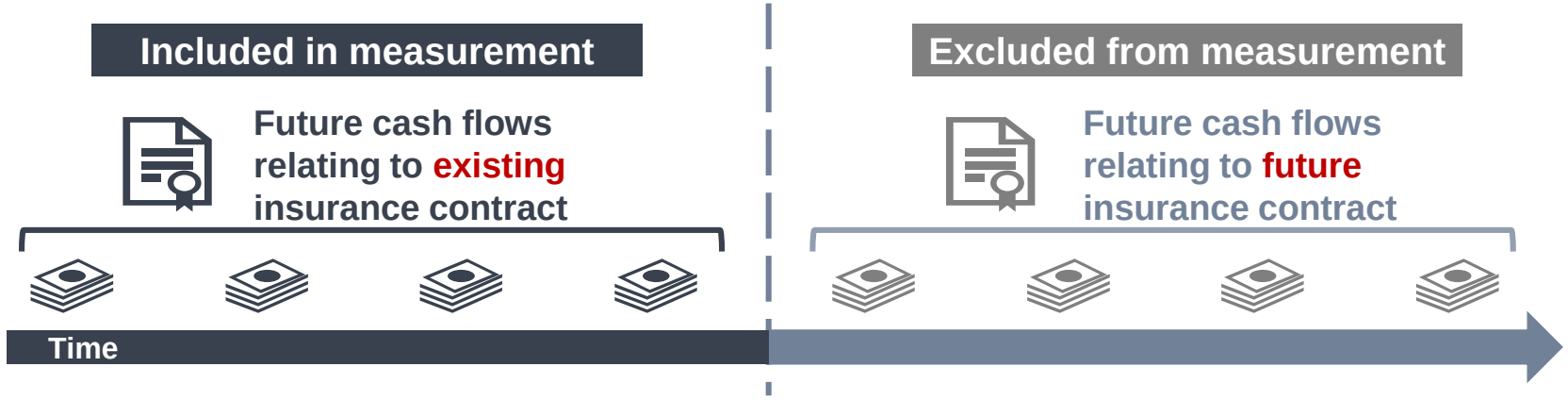
Market consistent discount rate?

Capital regimes	Base yield curve	Ultimate forward rate	Smoothing / Illiquidity premium
Asia			
Japan (regulatory)	Stipulated interest rate for policies issued after March 1996 with some exceptions. Otherwise, the (guaranteed) interest rates filed with FSA upon product launch.		
China	Government bond yield	4.5%	30 / 45 / 70 bps depending on product and issue date
Hong Kong (QIS 2)	Swap yield	HKD: 3.65%, USD: 3.65%	Volatility adjustment or matching adjustment or OAG
India	BE investment return	N/A	N/A (although risk-adjusted corporate-bond spreads may be included)
Thailand	Government bond yield	Same level as at LLP	Averaging of government bond yield
Malaysia	Government bond yield	Same level as at LLP	N/A
Singapore	Government bond yield	SGD: 3.8%, USD: 3.8%	Allowance for illiquidity premium or matching adjustment
Indonesia	Government bond yield	N/A	Averaging of government bond yield plus a discretionary adjustment of up to 50bps
Taiwan	US Government bond yield	N/A	N/A
South Korea	Assumed (guaranteed) interest rates filed with FSS at a product launch		

Liability valuation basis

Contract boundary

- The calculation of best estimate of liabilities should include all expected cash flows arising from the in-force contracts at valuation date, allowing a clear distinction between existing contracts and new contracts. In other words, the objective of the boundary principle is to determine when an existing contract ends and a new contract begins.



- When defining the contract boundaries, the following key considerations are usually taken into account

Unilateral right to terminate a contract	Ability to compel a policyholder to pay premium	Ability to freely re-price / fully reflect risks (i.e. amend premium or benefits to reassess risk of a contract)	Foreseeable recurrent premiums

Liability valuation basis

Explicit allowance of risk margin?

Capital regimes	Allowance for risk margin	Approach to assess risk margin
Asia		
Japan (regulatory)	Implicit margins	Implicit margins
China	✓	PAD
Hong Kong (QIS 2)	✓	PAD
India	✓	PAD
Thailand	✓	PAD
Malaysia	✓	PAD
Singapore	✓	PAD
Indonesia	✓	PAD
Taiwan	Implicit margins	Implicit margins
South Korea	Implicit margins	Implicit margins

Liability valuation basis

Allowance for time value of options and guarantees?

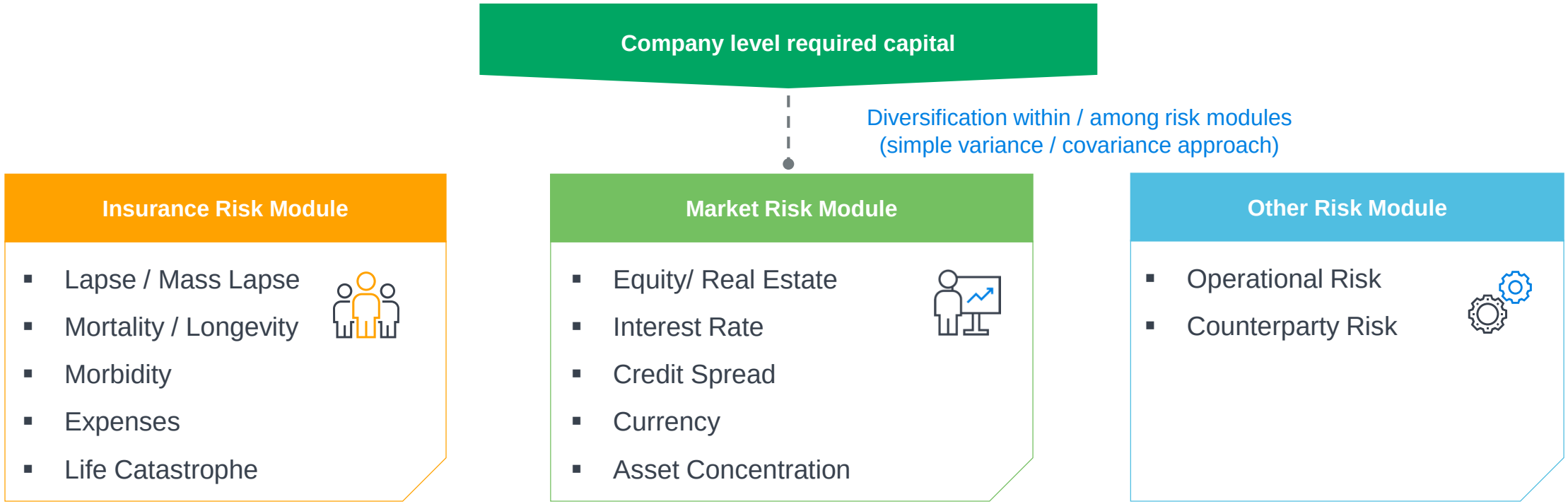
IFRS 17:
Probability weighted estimate of the contractual cashflows

Capital regimes	Allowance for TVOG	Approach to assess TVOG
Asia		
Japan (regulatory)	✗ (except for variable business)	Stochastic / Deterministic / Proxy
China	✓	Deterministic
Hong Kong (QIS 2)	✓	Stochastic / Deterministic / Proxy
India	✓	Stochastic / Deterministic / Proxy
Thailand	✗	No explicit reference
Malaysia	✓	Stochastic / Deterministic / Proxy
Singapore	✗	No explicit reference
Indonesia	✗	No explicit reference
Taiwan	✗	No explicit reference
South Korea	✓	Stochastic

Required capital calculation

Convergence of risk modules

- Key life risk modules usually considered as part of RBC frameworks (simplified):



- These risk modules are similar across Asian regimes, with some exceptions. Generally, there is a trend to move towards a more consistent definition of risk modules.

Required capital calculation

Components of insurance risk module

Capital regimes	Mortality/Longevity	Morbidity	Expenses	Lapse
Asia				
Japan (Regulatory)	*Factor*	*Factor*	✗	✗
China C-ROSS	**Stress**	**Stress**	**Stress**	**Stress**
Hong Kong RBC (QIS 2)	**Stress**	**Stress**	**Stress**	**Stress**
Thailand RBC 2	**Stress**	**Stress**	**Stress**	**Stress**
Malaysia RBC	**Stress**	**Stress**	**Stress**	**Stress**
Singapore RBC 2	**Stress**	**Stress**	**Stress**	**Stress**
Indonesia RBC	**Stress**	**Stress**	**Stress**	**Stress**
Taiwan RBC	*Factor*	*Factor*	✗	✗
South Korea RBC	*Factor*	*Factor*	✗	✗

Required capital calculation

Components of market risk module

Capital regimes	Equity	Property	Interest Rate	Credit Spread
Asia				
Japan (Regulatory)	*Factor*	*Factor*	*Factor*	*Factor*
China C-ROSS	*Factor*	*Factor*	**Stress**	*Factor*
Hong Kong RBC (QIS 2)	*Factor*	*Factor*	**Stress**	**Stress**
Thailand RBC 2	*Factor*	*Factor*	**Stress**	*Factor*
Malaysia RBC	*Factor*	*Factor*	**Stress**	✗
Singapore RBC 2	*Factor*	*Factor*	**Stress**	**Stress**
Indonesia RBC	*Factor*	*Factor*	*Factor*	*Factor*
Taiwan RBC	*Factor*	*Factor*	✗	✗
South Korea RBC	*Factor*	✗	*Factor*	✗

Required capital calculation

Convergence of stress level?

Capital regimes	Lapse risk	Equity risk
Asia		
Japan (Regulatory)	N/A	Down: 10% - 20%
China C-ROSS	Up: +40% ; Down: -40%	Down: 28% - 48%
Hong Kong RBC (QIS 2)	Up: +40% ; Down: -40%	Down: 40% - 50%
Thailand RBC 2	Up: +25% ; Down: -25%	Down: 25% - 50%
Malaysia RBC	Up: +50% ; Down: -50%	Down: 20% - 35%
Singapore RBC 2	Up: +50% ; Down: -50%	Down: 35% - 50%
Indonesia RBC	Incorporated in 95th percentile of premium reserve for GPV reserve	Down: 15% - 30%
Taiwan RBC	N/A	Down: 20% - 37.5%
South Korea RBC	N/A	Down: 12% - 16%
Other jurisdictions		
Solvency II	Up: +50% ; Down: -50%	Down: 39% - 49%
ICS (Field Test 2018)	Up: +40% ; Down: -40%	Down: 35% - 49%

Required capital calculation

Operational Risk

Capital regimes	Key Risk Driver	Stress Factor
Asia		
Japan (Regulatory)	Capital Requirement	2% or 3% on undiversified capital requirement (depend on unappropriated profit)
Hong Kong RBC (QIS 2)	Premium	Max of percentage of Best Estimate Liability (BEL) and gross premium written, capped at 30% of diversified capital requirement
Thailand RBC 2	Premium	1% of gross written premium in the preceding year
Malaysia RBC	Others	1% of total asset
Singapore RBC 2	Premium	Max of percentage of BEL and premium ceded, capped at 10% of diversified capital requirement
Indonesia RBC	Others	1% on general expense, 0.1% on UL investment fund and 50% on DAC
Taiwan RBC	Premium	0.5% - 5% for premium incomes and assets.
South Korea RBC	Premium	1% of premium revenue in the preceding year

Required capital calculation

Consideration of diversification / correlation matrix

Capital regimes	Overall	Within Life Insurance Risk	Within Market Risk
Asia			
Japan (Regulatory)	All components but operational	✓	✓
China C-ROSS	All component (no operational risk module)	✓	✓
Hong Kong RBC (QIS 2)	All components but operational	✓	✓
Thailand RBC 2	Between asset and insurance risk and within market	✗	✓
Malaysia RBC	No allowance under RBC but allowance under ICAAP	✗	✗
Singapore RBC 2	Between insurance, market and counterparty default risk	✓	✓
Indonesia RBC	No allowance	✗	✗
Taiwan RBC	Between asset and insurance risk	✗	✗
South Korea RBC	All components but operational	✓	✓

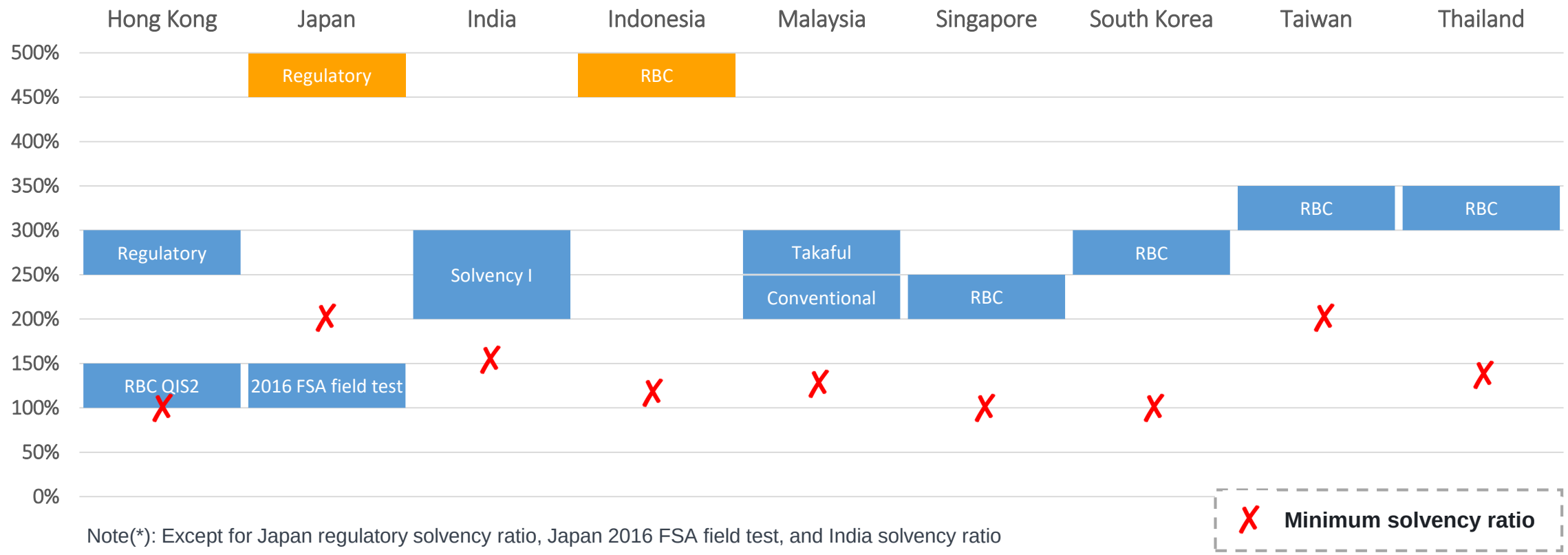
Comparative analysis of results

- Figures around solvency ratio and risk profile

Industry Average Solvency Ratio Level

Snapshot as at 31 December 2017*

- Estimates based on public information and our market intelligence. China C-ROSS is not included due to data limitations.



Note(*): Except for Japan regulatory solvency ratio, Japan 2016 FSA field test, and India solvency ratio

Minimum capital requirement (absolute amount in million)									
Local Currency	2	1,000	500	50,000 to 300,000	100	10	30,000	2,000	50
USD (rounded)	0.26	9.27	7.25	3 to 21	24.2	7.39	25.98	64.50	1.628

Liability Overview

Product / liability landscape

- Estimates based on public information and Milliman market intelligence.

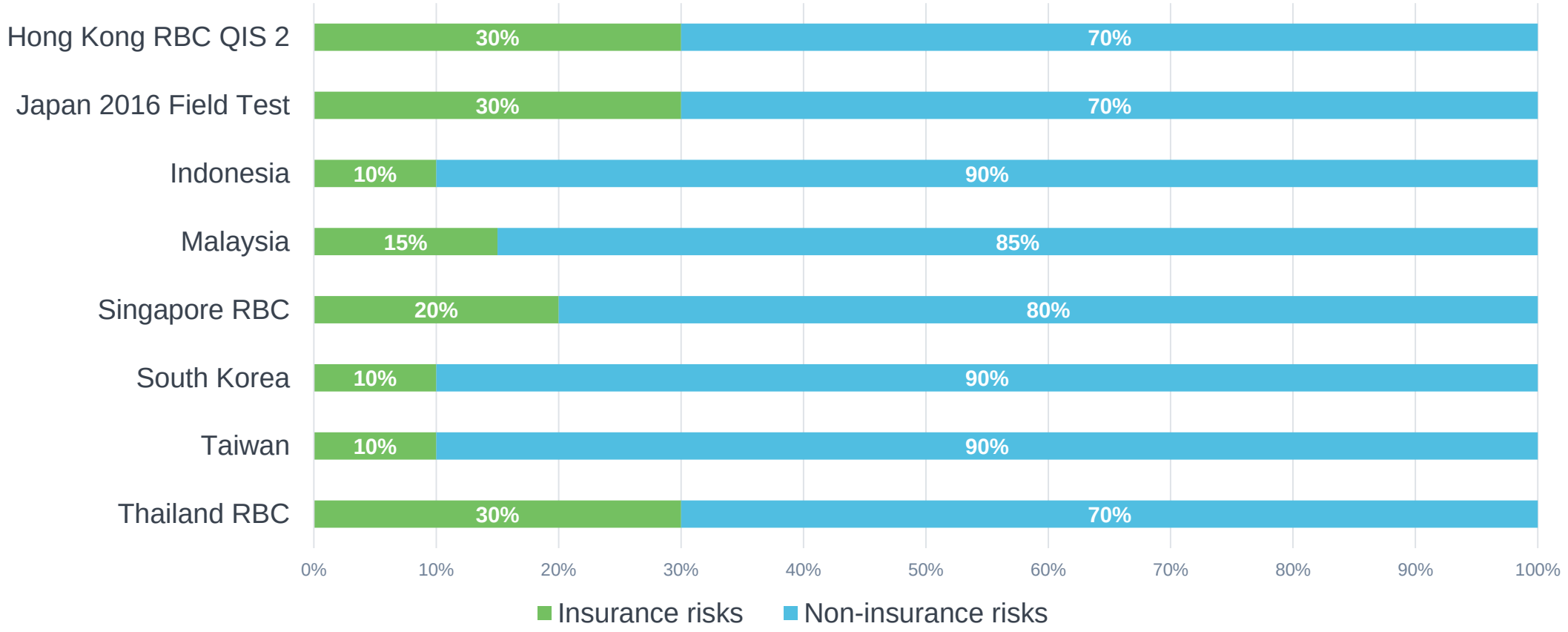
Capital regimes	Traditional Non-Par	Traditional Par	Universal Life	Unit-Linked	Variable Annuity
Asia					
Japan	Popular	Popular	Low / None	Moderate	Popular
India	Popular	Popular	Low / None	Popular	Low / None
Hong Kong	Popular	Popular	Popular	Moderate	Low / None
Thailand	Popular	Low / None	Low / None	Moderate	Low / None
Malaysia	Popular	Popular	Low / None	Popular	Low / None
Singapore	Popular	Popular	Popular	Popular	Low / None
Indonesia	Popular	Low / None	Low / None	Popular	Low / None
Taiwan	Popular	Moderate	Moderate	Popular	Popular
South Korea	Popular	Popular	Popular	Moderate	Moderate

Legend: Popular · Moderate · Low / None

Risk Charge Breakdown

Insurance risks versus Non-insurance risks

- Estimates based on public information and Milliman market intelligence. For Thailand and Singapore, the above breakdown is based on Thailand RBC1 and Singapore RBC 1 parameters respectively given new RBC 2 regimes have not been used in practice yet.



Risk Charge Breakdown

Breakdown of Market Risk

- Estimates based on public information and Milliman market intelligence.

Capital regimes	Interest Rate Risk	Credit Spread Risk	Equity Risk	Other Risks
Asia				
Japan (Regulatory)				
Hong Kong RBC (QIS 2)				
Thailand RBC				
Malaysia RBC				
Singapore RBC				
Indonesia RBC				
South Korea RBC				

Legend: Material Moderate Less material / Not applicable

Materiality of TVOG

High level assessment of TVOG

- Estimates based on public information and Milliman market intelligence.

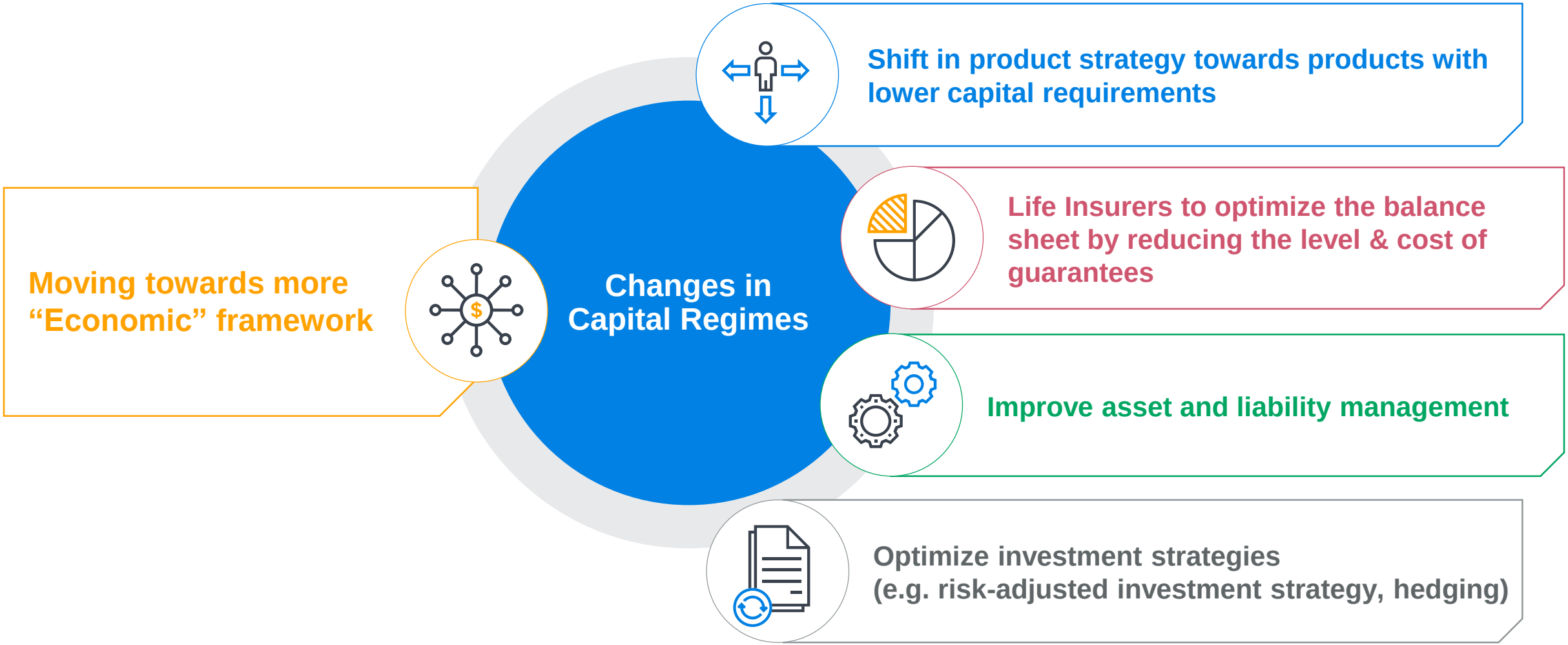
Capital regimes	Capital Regime	Materiality of TVOG
Asia		
Japan	2016 FSA Field Test	Potentially material for some companies
China	C-ROSS	Potentially material for some companies
India	Solvency I	**Generally not material**
Hong Kong	Solvency I (but moving to RBC)	Potentially material for some companies
Thailand	RBC	**Generally not material**
Malaysia	RBC	**Generally not material**
Singapore	RBC	Potentially material for some companies
Indonesia	RBC	**Generally not material**
Taiwan	RBC	Potentially material for some companies
South Korea	RBC	Potentially material for some companies

Implications

- What do these mean for insurance companies

Impact of moving towards an economic framework

Lessons learnt from implementation of European regime



Impact of moving towards an economic framework

As seen from insurer's value chain

Typical value chain

Product Development

Underwriting

Risk Assessment

Marketing

Sales & Distribution

Claims Management

Product Development

- RBC impacts from both assets and liabilities need to be considered at pricing stage.
- Reinsurance, hedging and diversification benefits can be considered more explicitly and used to lessen RBC impact.

Sales & Distribution Models

- Under a more economic RBC framework, product strategy may be shifted from offering high guarantees to lower guarantees or become more protection focused.
- Re-engineered distribution process, together with well-trained intermediaries with the right tools will be required to educate customers on the benefits of more "RBC-friendly" products

Impact of moving towards an economic framework

Considerations for management (1/2)

Strategy Planning

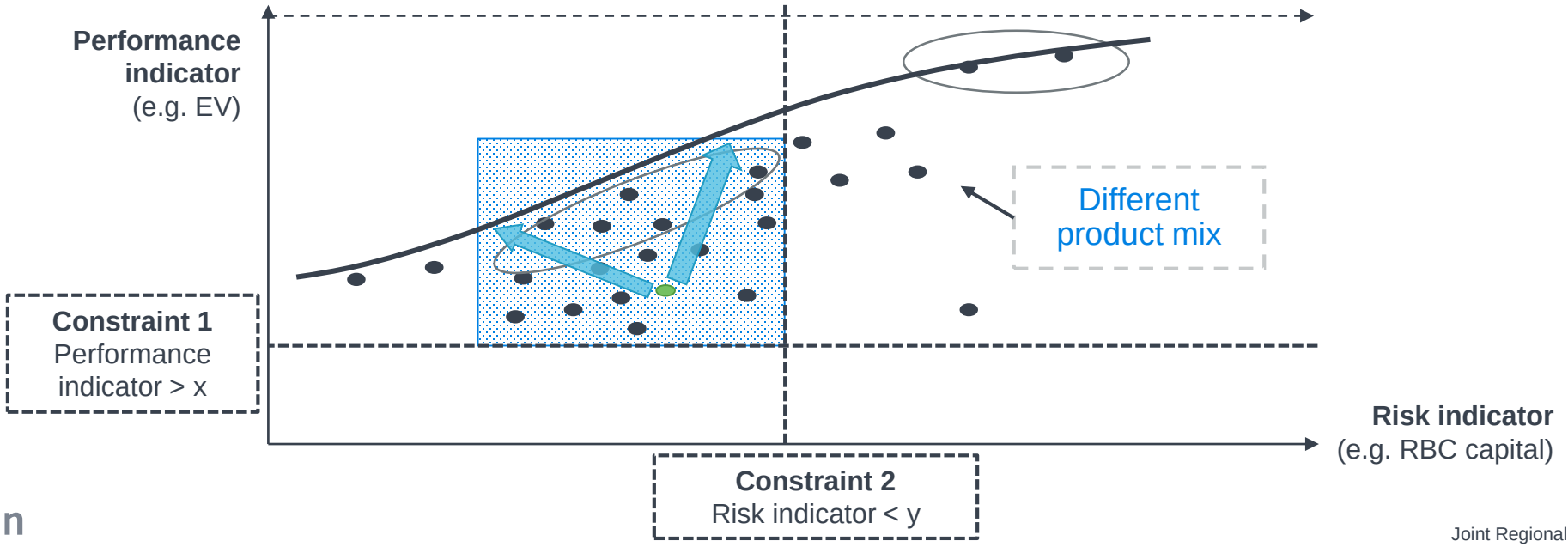
- **Traditional Strategic Planning**: Key focus on traditional Top Line & Bottom Line Growth Metrics (e.g. APE Growth, EV Growth, VONB Margin/ Growth)
- **Additional Risk-based Metrics required under new RBC regimes & IFRS 17**:

  Clearly identify the trade-off between

  1) Shareholder's value (e.g. measured in terms of EV or VONB) and

  2) Risk (e.g. measured in terms of RBC requirements, return on capital)

Sample strategy planning process



Impact of moving towards an economic framework

Considerations for management (2/2)

Minimising Capital Requirement

- Apart from the considering the product mix, there are other areas where management could consider in order to minimise the capital requirement under a given economic framework:

Risk Mitigation

- Reinsurance arrangements, as well as other financial risk mitigation tools, can be considered.

Investment Strategy / SAA

- Optimisation can be conducted using a similar efficient frontier analysis.
- Different investment strategy / SAA can be tested to identify the strategy that can minimise RBC.

Management Action Plan

- Management action plan should be tailored to reflect the risk faced by the company.
- The management action plan designed to lessen the impact under stressed scenarios as well.

Financing Strategy

- Eligible capital is grouped into tiers, with certain restrictions on the amount of lower tier capital.
- Management may need to reconsider the source of capital, in order to maximise the eligible capital.

Milliman

Thank you