# Synergies between key insurance metrics: IFRS17, Risk-Based Capital & Embedded Value

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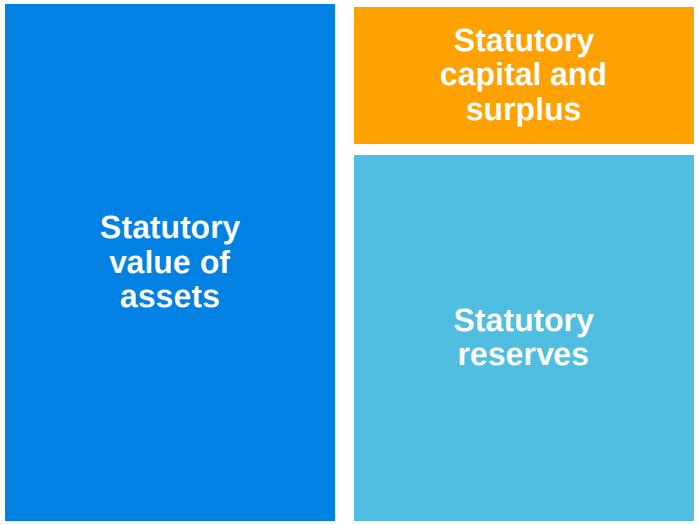
# Introduction

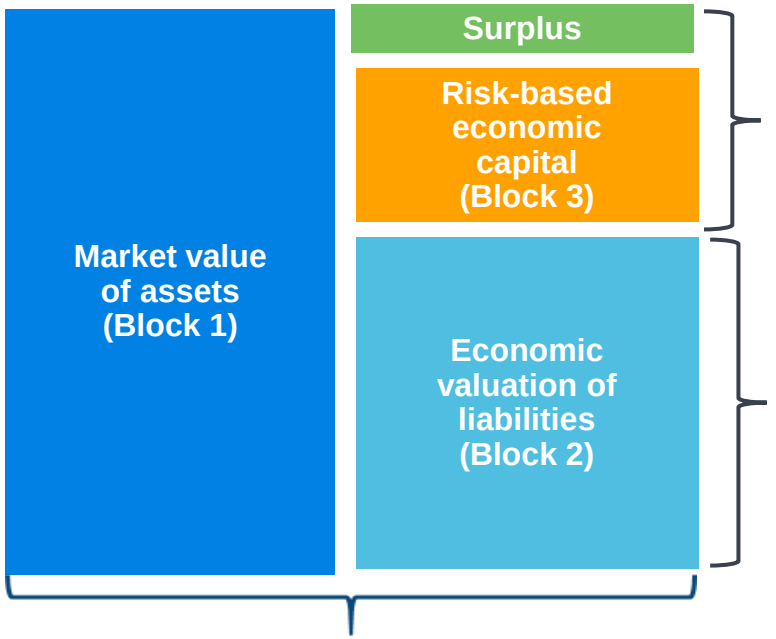
## Statutory balance sheet v's Economic balance sheet

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

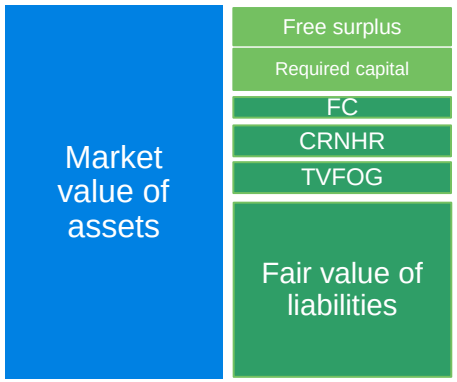



The available economic capital is the surplus of assets over and above liabilities derived from an economic balance sheet.

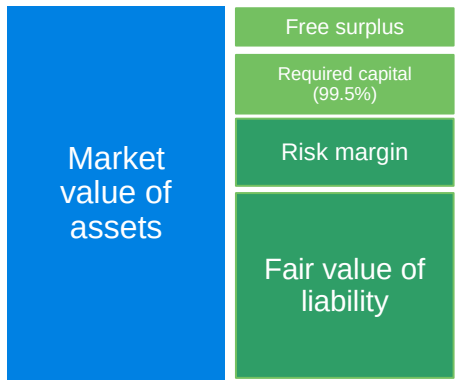
Economic valuation of liabilities = best estimate of liabilities + risk adjustment

# Different economic balance sheet frameworks

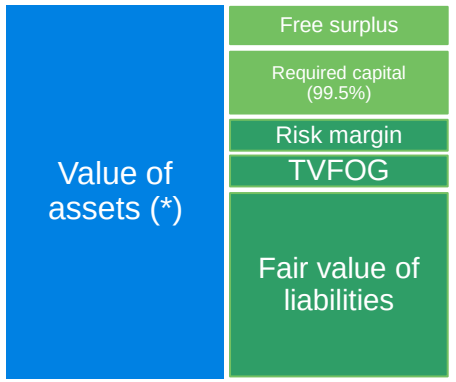
## MCEV (stochastic)



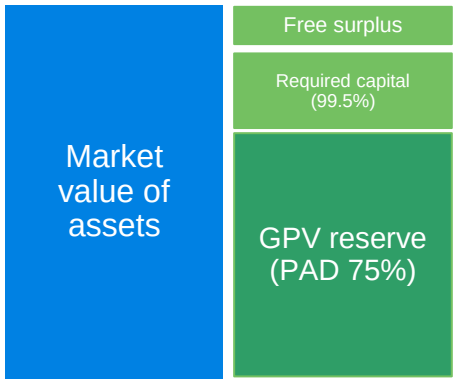

## Solvency II (stochastic)



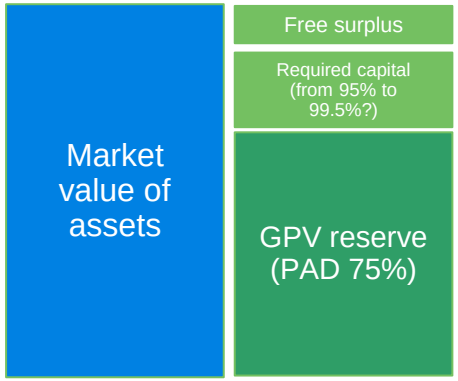

## China – CROSS (Deterministic "with TVOG")



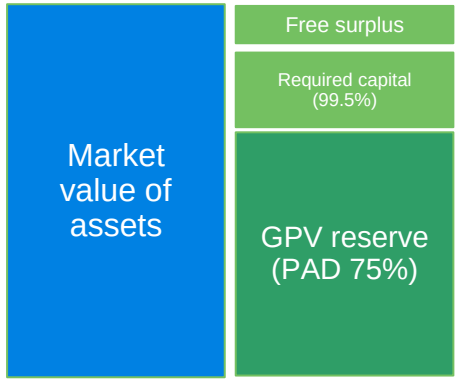

## Singapore RBC 2 (deterministic)




## Thailand RBC 2 (deterministic)



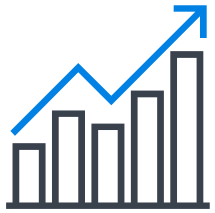

## Philippines RBC 2 (deterministic)




*Note: assuming no tax, FC = Frictional Cost, CRNHR = Cost of Residual Non-Hedgeable Risks, TVFOG = Time Value of Financial Options and Guarantees. (*) All assets are not on a market value basis.*

# Market value of assets

Block 1



## Market asset of value

- Market value should be based on quoted prices in active markets where possible.
- Other valuation methods, such as mark-to-model, should make maximum use of relevant market inputs.

## Goodwill

- Goodwill and customer values are set to zero.
- As a general principle, the economic balance sheet should not include any valuation of the future new business

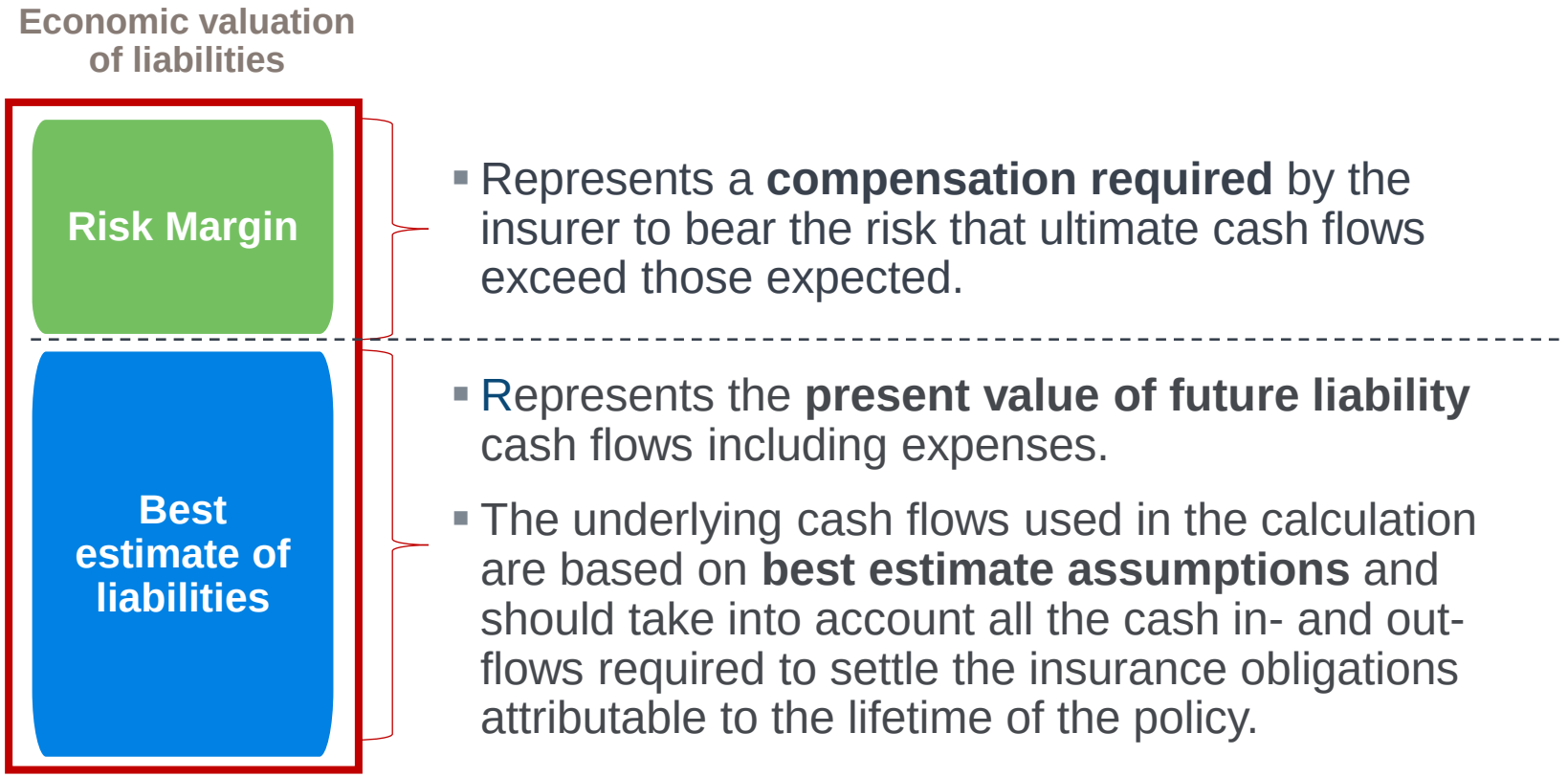
## Intangible assets

- Intangible assets should be recognized at fair value. If a fair value measurement is not possible, then such an asset should be valued at nil.
- Intangible assets should be recognized in the economic balance sheet if (i) it is probable that the expected future economic benefit will flow to the insurer and that the cost of assets can be measured reliably; and (ii) the assets should be separable and there should be evidence of exchange transactions for the same or similar assets.

# Economic valuation of liabilities

Block 2

Technical provisions should be valued using best-estimate, probability-weighted cash flows with an additional risk margin.

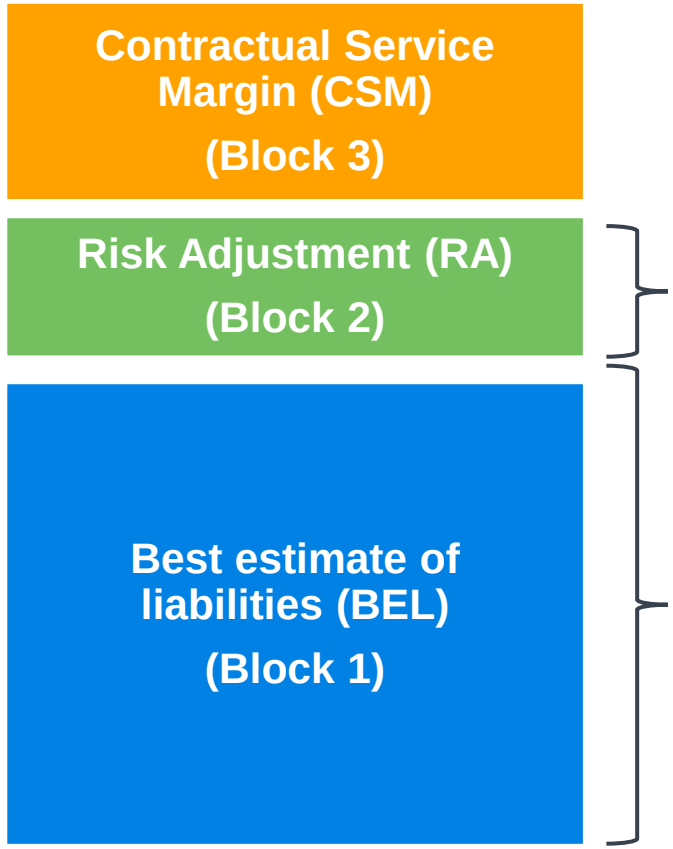



- Represents a **compensation required** by the insurer to bear the risk that ultimate cash flows exceed those expected.

- Represents the **present value of future liability** cash flows including expenses.
- The underlying cash flows used in the calculation are based on **best estimate assumptions** and should take into account all the cash in- and out-flows required to settle the insurance obligations attributable to the lifetime of the policy.

# IFRS17 balance sheet

IFRS17 is based on a building block approach as shown below:




## Block 3: CSM

An amount that reflects the excess of the consideration charged for the contract over the risk-adjusted expected present value of the fulfilment cash outflows (cannot be negative).

## Block 2: Risk Adjustment

An adjustment for the effects of risk and uncertainty about the amount and timing of the cash flows that arise as the entity fulfils the insurance contract.

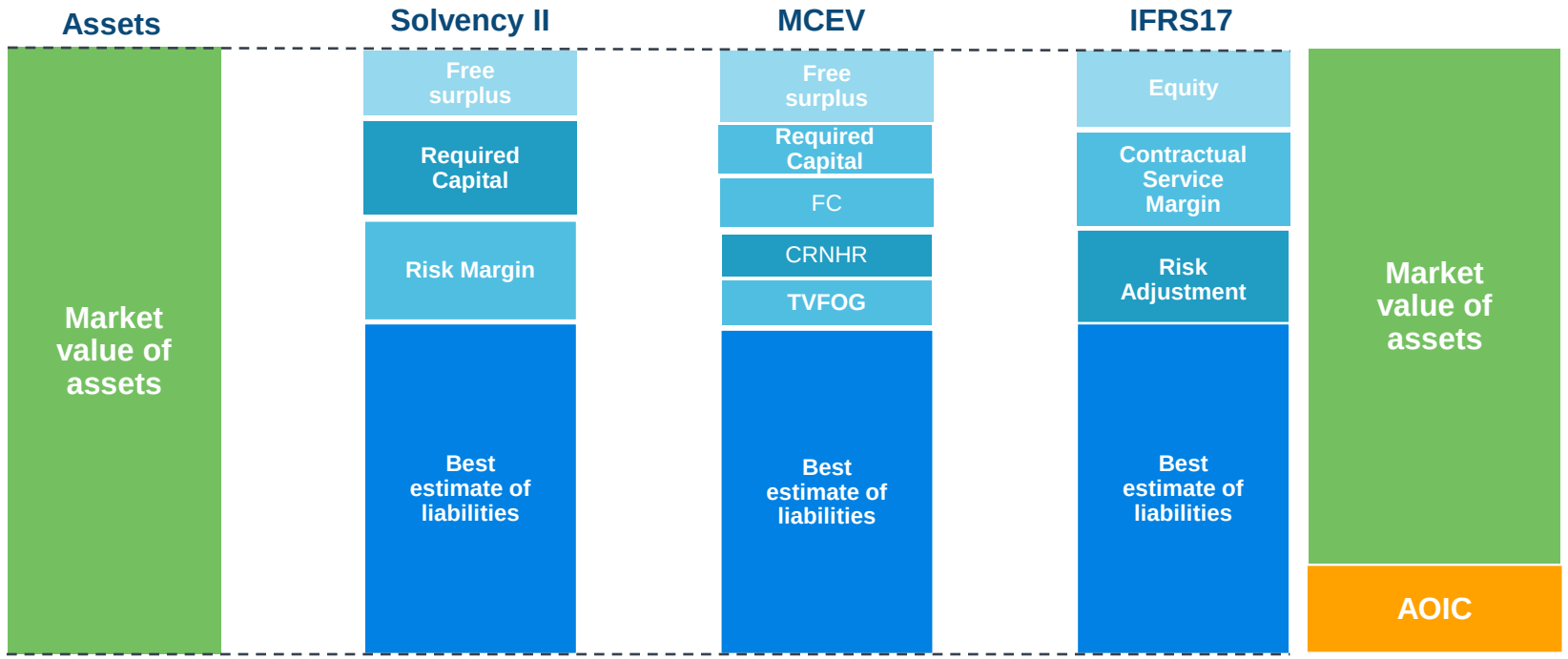
## Block 1: Best estimate of future cash flows

- **Expected value of cash flows**: a current, unbiased and probability weighted estimate of the cash flows expected to fulfil the insurance contract.
- **Discount rate**: an adjustment for the time value of money, using discount rates that reflect the characteristics of the cash flows. The discount rates are consistent with observable current market prices for instruments with cash flow characteristics that are consistent with those of the insurance contract.

# Comparison of IFRS17 balance sheet

Under the IFRS framework, assets are not all valued at market value in the IFRS balance sheet – therefore IFRS17 economic balance sheets below is more a conceptual view

**Key difference between Risk-Based Capital frameworks and IFRS17 is the Contractual Service Margin that defers gains.**




**Similar concepts but different objectives**

**Solvency II**: establish a risk-based capital framework to maintain capital adequacy.

**IFRS17**: improve transparency of insurers' financial statements.

# Economic valuation of liabilities

## Key considerations

- Expected value of cash flows
- Discount rate / risk free rate / illiquidity premium
- Embedded options and guarantees
- Risk margin / risk adjustment
- Contract boundaries
- Treatment of negative reserve / cash surrender value floor

# Expected value of cash flows

## Key principles

Best estimate of liabilities represent the **present value of future expected liability cash flows** over the lifetime of a policy:

### Cash flows to be taken into account

The cash flows would typically include:

(+) Future best-estimate **premium**;

(-) **Benefits** payments to cedants, policyholders and beneficiaries including an allowance for any discretionary benefits (usually similar treatment as statutory account);

(-) **expenses**, including administrative expenses, investment management expenses, claims costs, servicing costs, any payments to intermediaries (these expenses are inflated each year of the projection);

(+/-) payments to and from **reinsurers** or other providers of risk mitigation;

(+/-) Other cash flow items which are expected to be charged to policyholders or required to settle the obligations.

### "Best estimate" approach

- Assumptions should be based on a combination of **relevant, credible experience** as well as **expert judgement** as to potential future trends and developments if appropriate.
- The valuation should take into account **potential management actions** and changes in **policyholders' behaviour.**
- A potential extreme approach may be to **value at market value using the corresponding asset instruments where technical provisions are fully hedgeable**

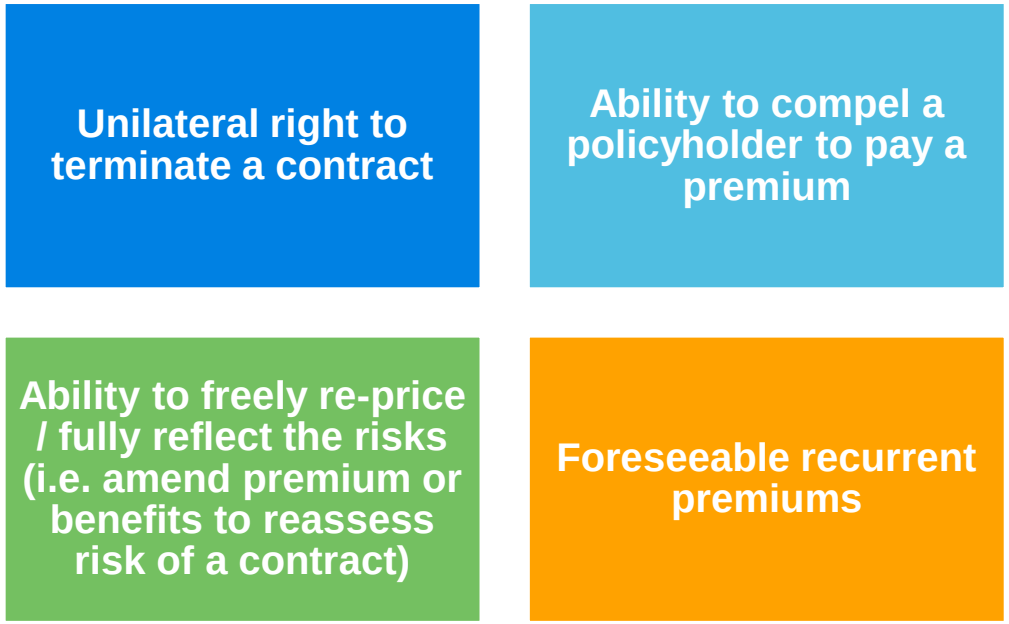
# IFRS17 Best estimate

## Fulfilment cash flows

- Objective: Estimate the expected (mean) present value of future cash flows.
- Best estimate cash flows under all possible scenarios based on conditions as of the reporting date – captures the time value of options and guarantees.
- Incorporate in unbiased way all reasonable and supportable information available without undue cost or effort about amount, timing and uncertainty of CFs.
- Reflect perspective of the entity as long as market variables are consistent with observable market prices for those variables.
- Only include cash flows within the boundary of the contract.
- **Key difference with the economic framework: inclusion of future expenses**
  - An important element is that only those cash flows that are **directly attributable** to fulfilling the portfolio should be **included**.
  - **General company overhead expenses** and **indirect costs not directly attributable** to contract activity, such as product development and training costs, are not part of the fulfillment cash flows.
  - Expenses that are not part of the fulfillment value must be recognized in the P&L when they occur.

# Contract boundaries

- Best estimate liabilities should include all expected cash flows arising from the **in-force contracts** at the valuation date.
- 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 can be taken into account including



# Contract boundaries

| | Comparison of different frameworks |
|---|---|
| MCEV | The concept of contract boundaries does not apply. Instead all cash flows related to contractual renewal premiums or foreseeable recurrent premiums are included when valuing the contract. |
| Solvency II  | Unilateral right to terminate, reject premiums or amend premiums/benefits to fully reflect the risk. In some cases, insurance and investment components of contracts may need to be separated and different boundaries may apply. |
| IFRS17 IFRS | Cash flows are within the boundary of an contract when the company can compel the policyholder to pay the premiums or has a substantive obligation to provide the policyholder with coverage. In particular, a contract boundary is set if the company has the right or the practical ability to reassess the risks by changing the price or level of benefits |
| Singapore RBC 2  | The term of the contract ends on the date when the insurer has the right to reassess the risk of the contract (on its own or as part of a portfolio of similar policies) and amend the premium such that the premium fully reflects the risks, unless the insurer has the ability, and right or willingness to compel the policyholder to pay the premium. |

**Broadly similar definition to determine contract boundaries**

# Expected value of cash flows

## Group of contracts

- Best estimate of liabilities are usually segmented by line of business in order to calculate technical provisions. A line of business usually defines a homogeneous group of products which are managed together and have similar risk characteristics in terms of, for example, underwriting policy, claims settlement patterns, risk profile of policyholders.
  - Lines of business under Solvency II:

**Contract with profit participation clauses**

**Contract where policyholder bears the investment risk**

**Other contracts without profit participations clauses**

  - Key “lines of business” under Thailand RBC 2 framework for long-term liabilities.

**Conventional life – Non-participating products**

**Conventional life – Participating products**

**Annuity in payment – Non-participating products**

**Universal life / unit-linked**

**Personal accident / riders / group (long term)**

# IFRS17

## Measurement approaches

There are three measurement approaches in IFRS17, depending on the type of insurance contracts:

**GENERAL MODEL**
(aka Building Block Approach or BBA)

Default valuation approach

**VARIABLE FEE APPROACH**
(VFA)

Approach for contracts with direct participation features (e.g. unit-linked, with-profit contracts)

**PREMIUM ALLOCATION APPROACH**
(PAA)

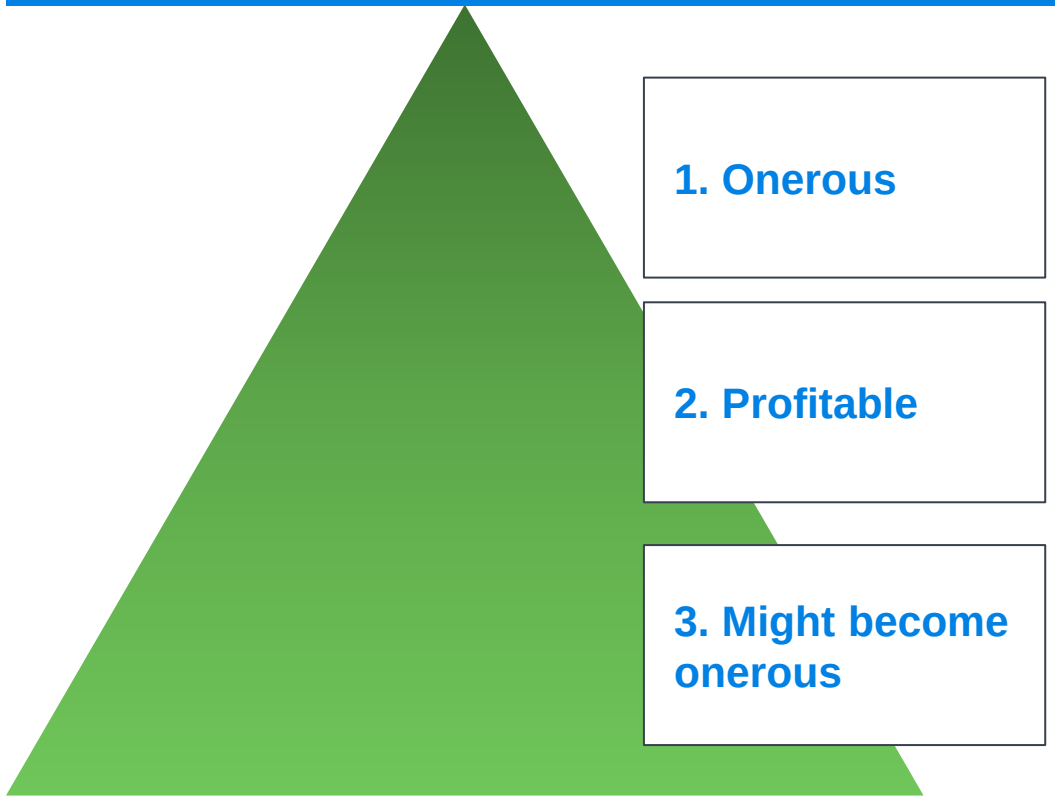
Simplified approach for short duration contracts (coverage period up to one year)

# Level of aggregation

## Minimum grouping

A minimum of three groups for each issue year within a portfolio

**Groups of contracts are the unit of measurement used in IFRS17**




**Key issue**

Assessing significant possibility of becoming onerous

**Exception**

A legal or regulatory restriction on entity's ability to reprice the product.

Can include in same group

# Discount rate

## Bottom up approach

- To begin the construction of a suitable risk discount rate curve, companies will typically identify returns on assets in the market that are a proxy to the risk-free rate.
- In practice the starting point for the reference rate is either **government bonds** or **interest-rate swaps** based on interbank lending rates.

| | Solvency II | RBC2 – Singapore | RBC 2 – Thailand | CROSS – China |
|---|---|---|---|---|
| Reference rate | **Swap** rate mainly | Singapore **government** bond | Thai **government** bond | Chinese **government** bond yield |
| Adjustments | • Application of **credit risk adjustment** as a parallel downward shift of the market rates observed for maturities up to the last liquid point.<br>• The credit risk adjustment may lead to negative interest rates (i.e. there is no floor for the adjusted rates).<br>• Three possible situations where credit adjustment is calculated differently (swap rate currencies / government bond yield currencies / others). | • No further adjustment | • The current RBC framework uses the maximum between the current valuation date yields and the weighted average of 51% of the yields at valuation date and 7% each for yields applicable at the prior seven quarters. | • The discounting of future cash flows is based on the 750-day moving average of government bond yield curve with an ultimate rate adjustment.<br>• Before the 20th year, the curve is based on 750-day moving average of the government bond yield. Between the 20th year and the 40th year, the yield is graded between the 20th year rate and the ultimate rate. Beyond 40 years, the ultimate rate is used. |

# IFRS17

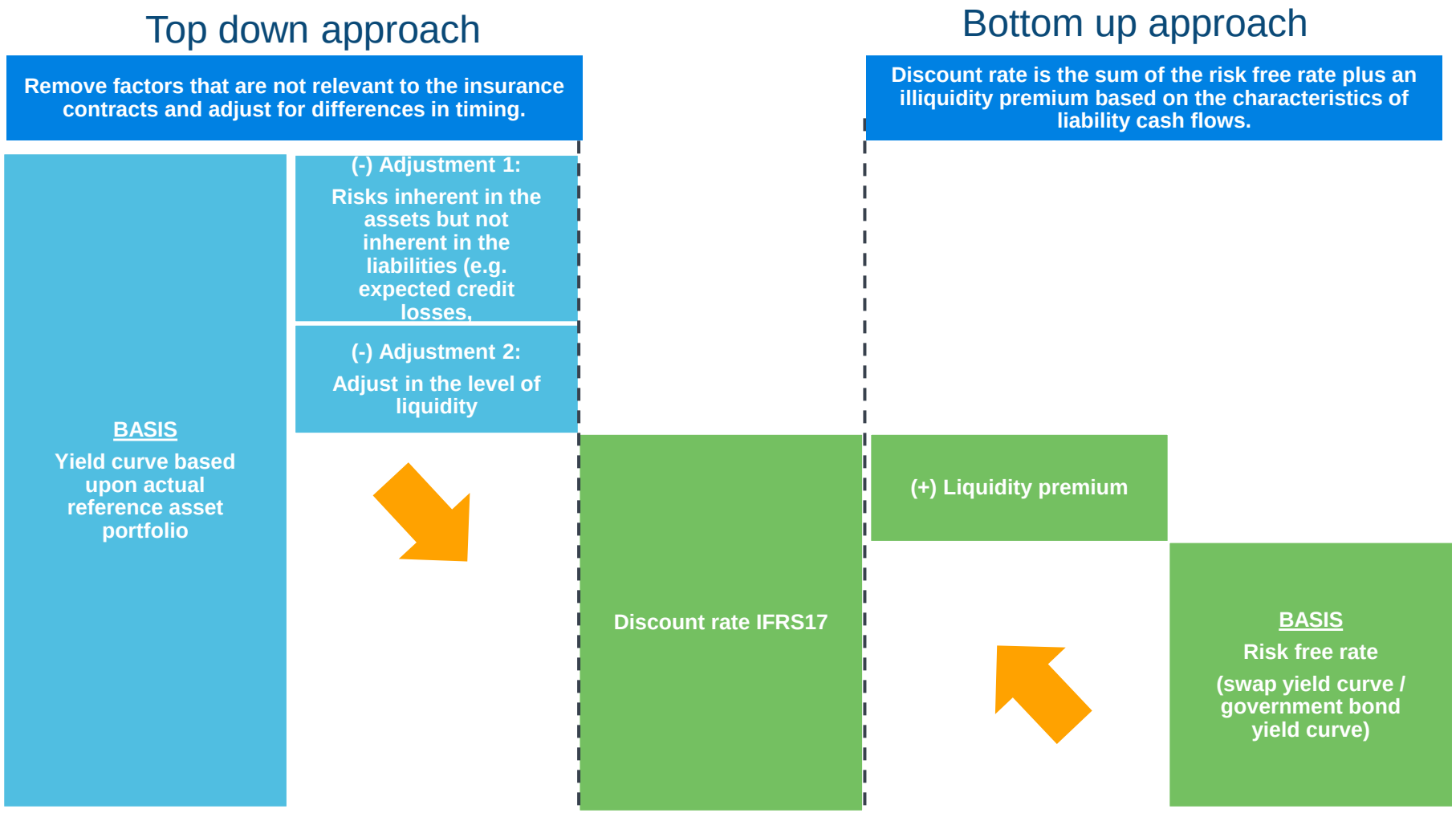
## Discount rate

- Under IFRS17, a discount rate must be applied to the current estimate of the future cash flows to adjust those cash flows for the time value of money.
- It is further specified that this discount rate must:
  - Be consistent with observable current market prices for instruments with cash flows whose characteristics reflect those of the insurance contract liability, in terms of, for example, timing, currency and liquidity.
  - Exclude any factors that influence the observed rates but are not relevant to the insurance contract liability (e.g. risk not present in the liability but present in the instrument for which the market prices are observed). Own credit risk of the insurer should not be considered when determining the discount rate.
- The IASB does not prescribe a single method to determine the discount rate, but acknowledge two acceptable approaches:

| A bottom-up approach | A top-down approach |
| --- | --- |
| • The risk-free rate is the starting base for adding extra characteristics that are part of the fulfilment cash flows, like illiquidity. | • The return on a reference portfolio is the starting base and then stripped of all characteristics that are not inherent to the fulfilment cash flows. |

# Discount rate

## Bottom-up approach vs top-down approach



# Embedded options and guarantees

## Treatment under IFRS17

- Some contracts combine insurance coverage with a savings component that may contain embedded options and guarantees. Besides a current intrinsic value, such options can also have a material impact on the value. In other words, discounting expected cash flows with a risk-free discount rate would not lead to a current value that is consistent with observable market prices.
- Different solvency regulatory regimes allow different treatment for the Time Value of Options and Guarantees (“TVOG”):

| |  Solvency II |  RBC2 – Singapore |  RBC 2 – Thailand |  CROSS – China |
|---|---|---|---|---|
| Methodology | • Core element of the best estimate liability<br>• Stochastic evaluation | • Options and guarantees are explicitly excluded. | • No allowance for time value of options and guarantees | • The TVOG is calculated explicitly as part of the best estimate of reserves.<br>• TVOG is only derived for participating, universal life and variable annuity (VA) business. |

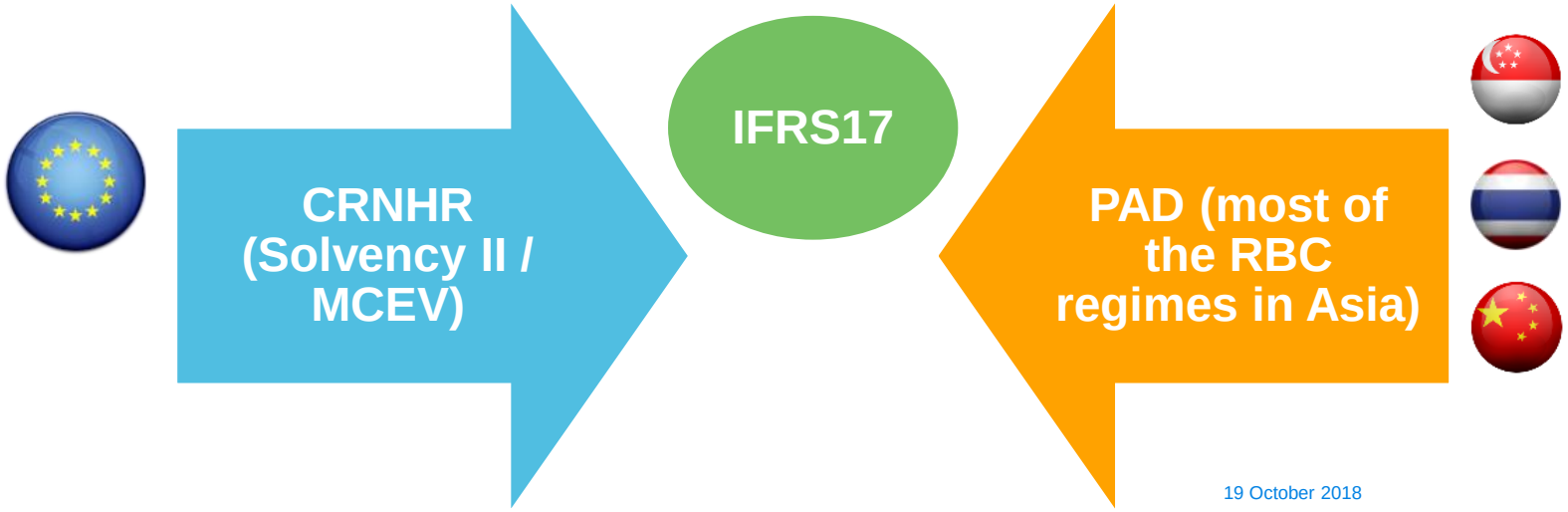
**Exposure Draft 2013 - Paragraph 25.**

**“An entity shall determine the fulfillment cash flows by adjusting the estimates of future cash flows for the time value of money, using discount rates that reflect the characteristics of those cash flows.”**

# Risk margin / Risk adjustment

## Overview

- The risk margin is designed to ensure that the value of technical provisions is sufficient for another insurer to take over and meet the insurance obligations.
  - If an insurer becomes insolvent and goes into run-off, there is no risk-bearing capital anymore. The desired outcome would be that another insurer would take over the portfolio of assets and liabilities.
  - This insurer could eliminate all the hedgeable risks inherent in the acquired portfolio. However, the non-hedgeable risks cannot be eliminated and a sufficient amount of risk capital is required.
  - The risk margin is considered as compensation for the insurer for providing the required risk capital for the non-hedgeable risks. In general, most insurance risks (e.g. mortality) are deemed to be non-hedgeable risks.
- In practice, two different approaches can be used to assess the risk margin:



# Risk margin / Risk adjustment:

## Focus on CRNHR approach

- **Step 1: Calculate the required capital for non-hedgeable risks.**
  - It includes underwriting risks (e.g. lapse, mortality, etc), reinsurer default risk, operational risk and “unavoidable” market risk.
  - The full diversification benefit between the non-hedgeable risk types are considered.
- **Step 2: Project the SCR for non-hedgeable risks**
  - After having determined the SCR for the non-hedgeable risks required for year 0, it is projected for the future years until the run-off of the portfolio. Ideally, a stochastic valuation would be needed for any future point in time.
  - Practically, for underwriting, reinsurance default and operational risks, the initial SCR is ran-off proportionally in line with a suitable risk driver. For example, considering the provisions as the best risk driver, the ratio of the SCR compared to the provisions is determined for year 0 and used to approximate the future capital requirements by assuming the ratio remains unchanged.
- **Step 3: Apply the cost-of-capital charge factor COC**
  - The cost of capital is a premium over the risk free rate that represents the reduction in economic "value" (cost) linked to the risks considered. Therefore, the determination of this cost should ideally be linked to the nature of the risk (distribution) and to the valuation of such risks.
  - Although the difference in distribution is partially captured by the valuation of the capital required to back risks, the cost should also be adapted - and therefore may be different for different lines of business (LoB), it was decided to use the standard 6% cost of capital rate for all LoB (article 39 Delegated Acts 2015/35) as this cost is believed to be an average.
- **Step 4: Deduce the risk margin**

  i.e

  $$\text{Risk margin} = 6\% \frac{\sum_{t\geq 0} SCR(t)}{(1+r_{t+1})^{t+1}}$$

  SCR(t) = the SCR for year t for non-hedgeable risks
  $R_t$ = risk discount rate for maturity t
- Simplification must be made when using this approach as it may not be straightforward to (i) calculate the initial risk margin; (ii) project the solvency capital requirement forward; and (iii) to project the risk margin forward. Potential simplifications include the use of a constant risk margin, the use of simple ratios method, the use of a duration approach.

# IFRS17

## Risk adjustment

- Adjustment to PV of cash flows to reflect compensation entity requires for bearing uncertainty as to amount and timing of cash flows due to non-financial risk
  - Financial risk is reflected in cash flows or in discount rate and not in the RA
  - Non-financial risk includes insurance risk and other risks such as lapse and expense risk
- Only reflects risk arising from insurance contracts; not general operational risk.
- Reflects degree of diversification the entity includes when determining the compensation to require. For measurement on a more granular level it will be necessary to allocate the amount of diversification
- Reflects both favorable and unfavorable outcomes in a way that reflects the entity's degree of aversion to risk.

# IFRS17

## Criteria for risk adjustment method

- No requirements about the confidence level or horizon. To be determined by the company.
  - Risks with low frequency/high severity should have higher risk adjustment than risks with high frequency/low severity
  - For similar risks, contracts with longer durations should have higher risk adjustments than shorter duration contracts
  - Risks with a wider probability/heavy tail distribution will have a higher risk adjustment than risks with narrower probability distributions
  - The less that is known about the current level and trend, the higher the risk adjustment
- To the extent that emerging experience reduces uncertainty about the amount and timing of cash flows, risk adjustments will decrease and visa versa
- Need to disclose confidence interval associated with risk adjustment if use another method. One possible approach is to benchmark with the Solvency II SCR (99.5% percentile) and assume normality (99.5% percentile ~ 2.58 x SD)

# IFRS17

## Contractual service margin

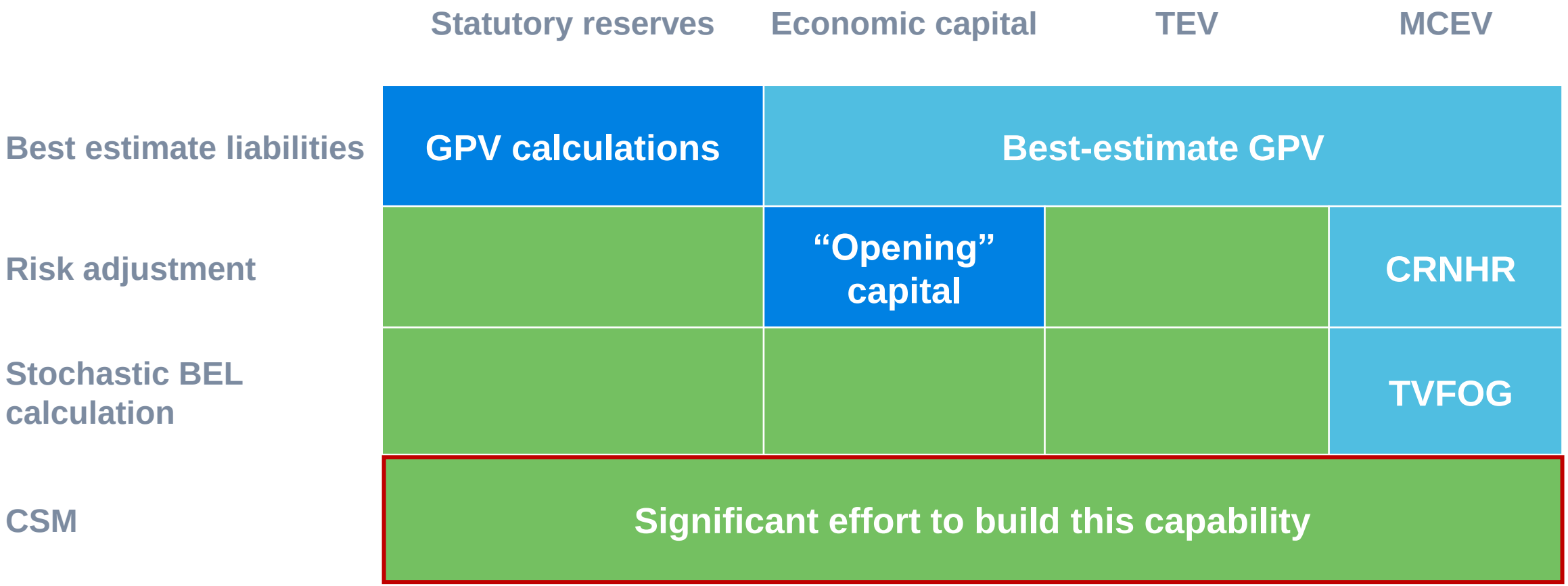
- An amount  that reflects the excess of the consideration charged for the contract over the risk-adjusted expected present value of the fulfilment cash outflows.
- The contractual service margin is a measure of the service the entity would perform in fulfilling the contract. Accordingly the entity would not recognise the excess as an immediate gain, but would instead recognise that gain over time as the entity satisfies its obligation to provide service over the coverage period.
- The contractual service margin cannot be negative.
- Amortized over coverage period in proportion to service provided (insurance coverage or benefits).
- CSM released in year t = (expected release of coverage units in year t) / (sum of expected coverage units in all years)
- CSM unlocked for changes in estimates of future cash flows related to providing future service that derive from non-financial risks.
- CSM not unlocked for changes in discount rates

# Building Block Approach: Bridging with other frameworks

| Item | MCEV ® or MC EEV | Solvency II | IFRS 17 |
|---|---|---|---|
| **Value of future profits** | ▪ Reported as **Value of In-Force** | ▪ Immediately recognized in the **Available Own Funds** | ▪ Recognized over the life time of the contracts via the release of the **CSM** |
| **Risk Adjustment** | ▪ **CNHR**; based on 99,5% percentile over 1 year horizon<br>▪ **FCOC**; to be determined by the company | ▪ **Risk Margin** calculation is very strict: Under Solvency II: 6% * NPV(Future SCRs)<br>▪ SCR based on 99,5% percentile over 1 year horizon | ▪ Flexibility on the level of the **Risk Adjustment** as well as in the method used to derive it |
| **Expenses** | ▪ **All** expenses included in the Best Estimate | ▪ **All** expenses included in the Best Estimate | ▪ **Only expenses** directly **attributable** to the contract included in the future cash-flows<br>▪ For acquisition expenses, directly attributable to the portfolio, including those for unsuccessful contracts (directly attributable to the portfolio). |
| **Discount rates** | ▪ **SWAP** rate mostly with LLP and UFR<br>▪ **Government** bond rate mostly with LLP and UFR | ▪ Interest rate provided by **EIOPA**<br>▪ Including Volatility adjustment, Credit Risk Adjustment<br>▪ Matching adjustment may be used after approval | ▪ To be **determined by the company** following the principles defined in IFRS17 |
| **Focus on** | ▪ **Income statement** and **performance** | ▪ **Balance sheet** and **solvency** | ▪ **Income statement** and **performance** |
| **Applicable to** | ▪ Companies that disclose according to the MCEV principles | ▪ All European companies and companies outside Europe that are part of a European insurance group | ▪ Companies in jurisdictions where IFRS is applicable and companies that on a voluntary basis report under IFRS |

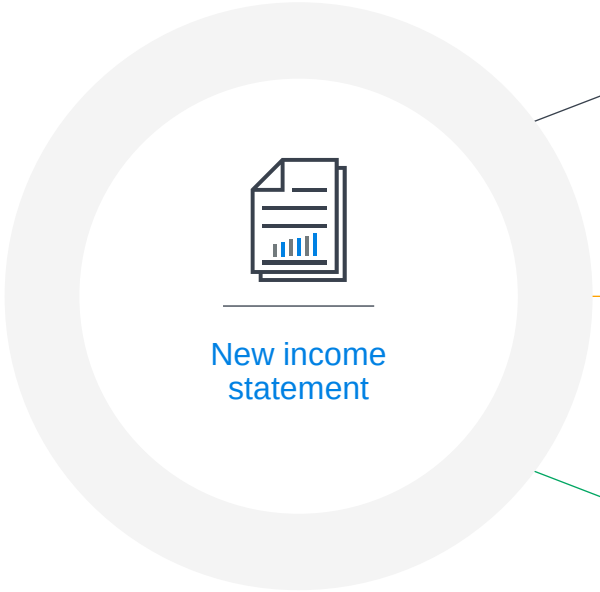
# Readiness assessment

Which building blocks do we already have and what do we need to develop?



# IFRS17: Balance sheet and income statement components

To construct the new income statement “requires” a three-step approach




1. Calculation of the Balance Sheet items (BE, RA)
2. **Creation of the analysis of change of the balance sheet items**
   **Calculation of the CSM**
3. **Measuring variances**

**Requirements**

- Cash flow information and values by the calculation engines;
- Identification of changes in the portfolio at a granular level and movements in the value of the portfolio.
- Direct two-way interaction between General Ledger (for realised cash flows) and actuarial projection software.

# The income statement for non-participating contracts

Assuming the assets backing this contract are ‘fair value through OCI’

Part III

| Statement of Profit and Loss of ..... (Name of insurance company) for the year ended ..... | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Particulars | | Note | Current Year | | | Previous Year | | |
| | | | Policyholders (Revenue A/c) | Shareholders (P & L A/c) | Total | Policyholders (Revenue A/c) | Shareholders (P & L A/c) | Total |
| Insurance Revenue | | 15 | | | | | | |
| Insurance Service Expenses | | 16 | | | | | | |
| Net expenses from reinsurance contracts ** | | - | | | | | | |
| **Insurance Service Result** | (A) | | | | | | | |
| Interest revenue on financial assets not measured at FVTPL | | 17 | | | | | | |
| Other investment revenue (including fair value changes) | | 18 | | | | | | |
| Net impairment loss on financial assets | | 19 | | | | | | |
| **Investment return** | (B) | - | | | | | | |
| Net finance expenses from insurance contracts | | 20 | | | | | | |
| Net finance income from reinsurance contracts | | | | | | | | |
| Movement in investment contract liabilities | | | | | | | | |
| **Net Investment Result** | (C) | (A)+(B) | | | | | | |
| Revenue from investment management services | | | | | | | | |
| Other income | | 21 | | | | | | |
| Other operating expenses | | 16 | | | | | | |
| Other Finance costs | | 22 | | | | | | |
| **Sub-total** | (D) | | | | | | | |

Insurance contracts

**Insurance service result**

Release of CSM
Actual vs. Expected

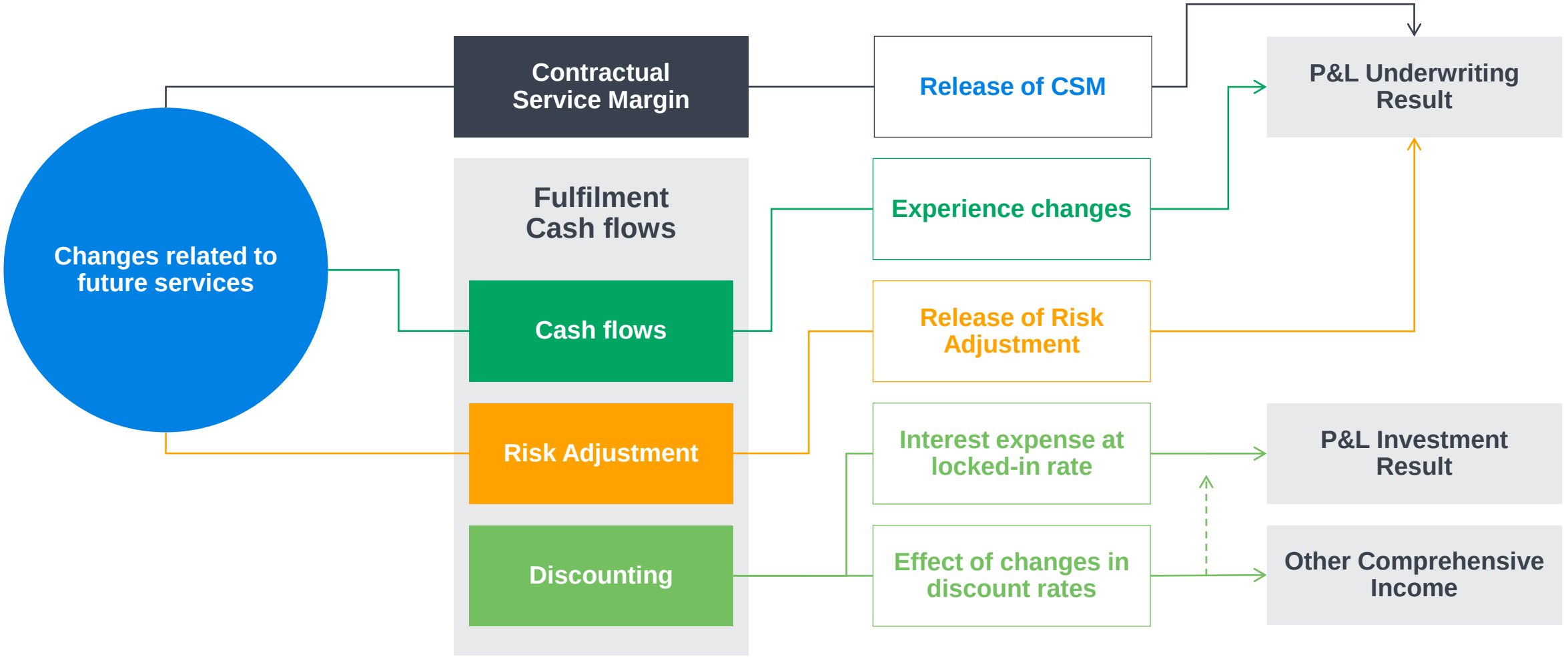
**Net investment result**

Book value Investment return
vs. locked in investment return

**Other Comprehensive Income**

Asset-liability management
(market value basis)

# Subsequent measurement & impact on P&L



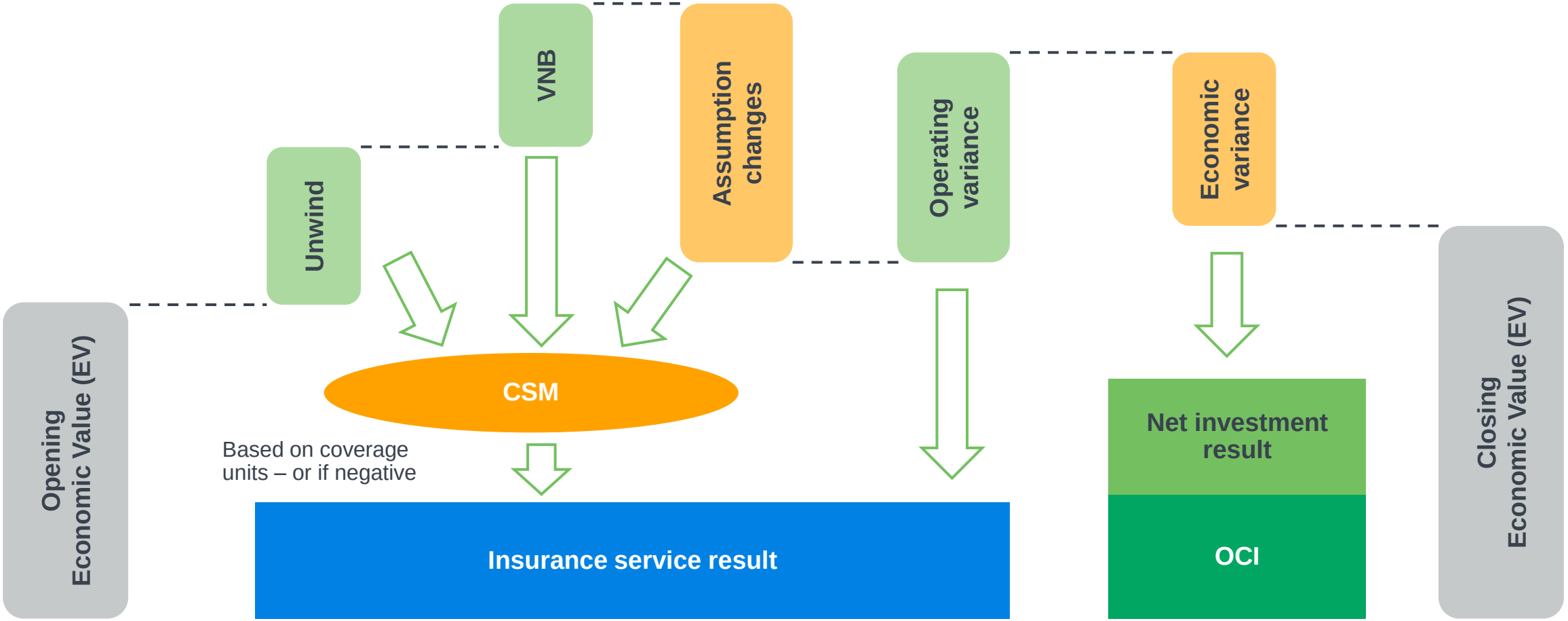
# Disclosures

## Explanation of recognized amounts

- Reconciliations of beginning and ending balances of:
  - Net liabilities (assets) for remaining coverage
  - Onerous contract values
  - Claim liabilities
- Separately for present value of cash flows, Risk adjustment, Contractual Service Margin
- Identify items from roll-forwards that go into Insurance Revenue, Insurance service expense
- Separate incurred claims and expenses, acquisition expense amortization, changes related to past service, changes related to future service
- Disclose cash flows separately for:
  - Premiums
  - Incurred acquisition expenses
  - Incurred claims and expenses
- Significant amounts of detail behind revenue and expense accounts in income statement

# Mapping the analysis of movement (AOM)

Non-par, non-linked contracts



# Questions?

# Thank you

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# Disclosure

## Nature and extent of risks in insurance contracts

- Exposure to risk and how they arise
- Entity's objectives, policies and processes for managing risks
- Methods used to measure risks
- For each type of risk – quantitative information about its exposure
- Effect of regulatory framework such as minimum capital requirements, minimum interest rate guarantees that are required.
- Concentrations of risk
- Sensitivity analysis for profit and loss and equity to changes in risks, with and without risk mitigation
- Claims development exhibits (undiscounted)
- Information on credit and liquidity risk

# Disclosures

## Significant judgements

- Methods used to measure insurance contracts
  - Cash flow estimates including estimates of discretionary payments
  - Risk adjustment determination
  - Discount rates
  - Determination of investment components
- Process for estimating inputs
- Confidence level associated with risk adjustment
- Yield curve used for discounting in general model