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ILA 201-I
Valuation and Advanced Product and Risk Management International Course Study Manual

1st Edition

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An SOA Exam

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NOTES

This study guide is designed to assist candidates preparing for the SOA Exam ILA201-I: *Valuation and Advanced Product and Risk Management—International*. It summarizes, in outline form, all the required books, study notes, and articles listed in the official syllabus. Within each topic, outlines are organized according to syllabus order.

The major topic areas covered include:

- International Financial Reporting Requirements
- Capital Management
- Management and Evaluation of Life Insurance Risks
- Advanced Product Management

To help candidates assess their understanding and prepare for the actual exam, a full-length practice exam is included. This mock exam mirrors the structure of the official exam (3 hours, 50 points). Both the questions and their assigned point values are representative of what candidates can expect. Complete solutions are provided for all questions to support self-assessment.

While every effort has been made to ensure the accuracy of the material, errors may remain. If you notice any issues or have suggestions for improvement, please contact us at support@actexlearning.com.

Best of luck in your studies and on exam day!

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THE IFRS 17 CONTRACTUAL SERVICE MARGIN: A LIFE INSURANCE PERSPECTIVE

I. CSM: The Basics

A. Introducing the Logic of the CSM

1. CSM at initial recognition

a. From an economic perspective, insurers would typically capitalize the total expected profit or loss from insurance contracts at the point of sale.

b. However, IFRS 17 departs from this view and introduces two deliberate, asymmetric treatments for profits and losses:

c. Profit recognition:

i. **Principle 1:** When an insurer writes profitable business, it must not recognize the expected profits immediatelyy. Instead, these profits must be spread over the coverage period.

ii. The profit is no longer capitalized. Instead, a CSM is established as a liability to be released over time. This approach contrasts significantly with the economic view.

iii.

$$CSM = -\min(FCF, 0) = -min(PV\ of\ cash\ outflows + RA - PV\ of\ cash\ inflows, 0)$$

iv. Example:

- PV of cash inflows: \$1000
- PV of cash outflows: \$795
- RA: \$40,

Then, fulfillment cash flow (FCF) = 795 + 40 – 1000 = -\$165, and CSM = -min(-165, 0) = \$165.

d. Loss recognition:

i. **Principle 2:** When an insurer writes loss-making business, it must recognize the expected losses immediately, rather than deferring them over time.

ii. The loss is immediately capitalized and recognized in P&L, consistent with the economic view.

iii. Loss component (LC):

$$LC = max(FCF, 0) = max(PV\ of\ cash\ outflows + RA - PV\ of\ cash\ inflows, 0)$$

iv. Example:

- PV of cash inflows: \$800
- PV of cash outflows: \$795
- RA: \$40

Then, FCF = 795 + 40 – 800 = \$35, CSM = -min(35, 0) = 0, and LC = max(35, 0) = \$35.

2. CSM at subsequent measurement

a. Under IFRS 17, insurers are required to update assumptions to reflect the most recent information. Any changes related to future service must adjust the CSM.

b. **Principle 3:** Despite some exceptions, the CSM must be adjusted for all changes relate to future service. For example, favourable mortality updates increase CSM, unfavourable lapse experiences decrease CSM.

c. **Principle 4:** If a contract that was previously profitable becomes loss-making, the insurer must recognize the loss immediately. The CSM is first reduced to zero. Any remaining shortfall is recognized as a LC in the P&L.

d. To summarize Principles 3 and 4, favourable assumption changes related to future service increase CSM. Unfavourable assumption changes related to future service decrease it. CSM must not become negative for direct contracts. If the contracts become onerous at subsequent measurement, reduce CSM to zero first and recognize any further loss as an LC in P&L.

e.

i.

$$Ending\ CSM = \max(Opening\ CSM + Interest\ accretion + Changes\ relating\ to\ future\ service, 0)$$

ii.

$$LC\ (if\ any) = -min(Opening\ CSM + Interest\ accretion + Changes\ relating\ to\ future\ service, 0)$$

f. Example:

- Opening CSM: $100
- Interest accretion: $5
- Changes relating to future service: $40

Then, ending CSM = max(100 + 5 + 40, 0) = $145, LC = -min(100 + 5 + 40, 0) = 0, there is no LC.

g. Example:

- Opening CSM: $100
- Interest accretion: $5
- Changes relating to future service: -$150

Then, ending CSM = max(100 + 5 – 150, 0) = 0, LC = -min(100 + 5 – 150, 0) = 0 = $45, an LC is established.

3. CSM for reinsurance contract held (RCH)

a. IFRS 17 modifies general CSM principles to better accommodate the treatment of RCH.

b. **Principle 5:** Except for loss-recovery component (see below), when an insurer purchases reinsurance, it must recognize the expected net cost or net gain for that contract immediately. Instead, it must spread that net cost or net gain over time.

c. Differences between CSM of direct contracts and RCH:

Feature	Direct contracts	RCH
Can the CSM be negative?	No. If it becomes negative, an LC must be established.	Yes. CSM can be positive (net gain) or negative (net cost)
Is an LC defined?	Yes	No
Purpose of contracts	Generate profits from insurance services	Offset risks in underlying direct contracts

d. In IFRS 17, RCH is treated as a risk mitigation tool rather than a profit-generating contract. Accordingly, the CSM for RCH reflects the net cost or net gain of transferring risk, not insurance profit.

e.

$$CSM\ for\ RCH\ =\ -\text{FCF}\ =\ -(PV\ of\ cash\ outflows - RA\ ceded\ -\ PV\ of\ cash\ inflows)$$

f. Example

- PV of reinsurance premiums payable: $600
- PV of reinsurance claims recoverable: $480
- RA ceded: $20

Then, FCF = 600 – 20 – 480 = $100, CSM = -FCF = -$100 (a net cost). It is a net cost because the insurer pays more than what it receives. *Note that there is an error in Table 6 on page 8 of the source material. The middle column should read: "£100 × -1 = -£100".*

g. Exception to Principle 5 – Loss-recovery Component

i. If a reinsurance contract is purchased before or at the same time as a loss is recognized on the underlying direct contracts, the insurer must immediately recognize reinsurance income to offset the direct contract loss. This offset is called the loss-recovery component.

ii. Example:

- PV of reinsurance premium payable: $300
- PV of reinsurance claims recoverable: $480
- RA ceded: $20
- LC from the underlying direct contract: $150

Then, FCF = 300 – 20 – 480 = -$200, CSM = -FCF = $200 (a net gain), the loss-recovery component is $150, offsetting the LC in the P&L. The remaining $50 will be released over time as insurance services are provided.

4. Recognition of the CSM in profit or loss

a. Why does CSM need to be recognized in P&L on a gradual and systematic basis over time?

i. Before IFRS 17, insurers recognize profits inconsistently overtime. The timing varied significantly by jurisdiction and by product types, leading to poor comparability and suboptimal decision-making.

ii. Under IFRS 17, profits are not recognized upfront (which would be too aggressive), nor are they delayed until claims are paid (which would be too slow). Instead, profits are released gradually and systematically as insurance services are provided.

b. What does this mean in practice?

i. To operationalize this principle, IFRS 17 introduces the concept of coverage units, which represent the relative value of insurance service provided in each period. The selection of coverage units involves actuarial judgments. They are generally based on benefit amounts, premiums, decrement-related quantities.

ii. CSM amortization calculation:

$$CSM\ amortization\ for\ year\ i\ =\ \frac{CU_i}{\sum_{j=i}^{n} CU_j} \times\ CSM\ before\ amotization\ for\ year\ i$$

iii. Example: 3-year term insurance contract

- Opening CSM: \$100
- Locked-in rate: 5%
- Changes relating to future service: \$20 in each year
- Coverage unit over 3 years: 10, 20, 30, respectively.

Then CSM roll forward for this product is as below:

	Year 1	Year 2	Year 3
a - Opening CSM	\$100	\$104.17	\$77.63
b - Interest accretion (a × 5%)	\$5	\$5.21	\$3.88
c - Changes relating to future service	\$20	\$20	\$20
d - CSM before amortization (a + b + c)	\$100 + \$5 + \$20 = \$125	\$129.38	\$101.51
e - Coverage units	10	20	30
f - CSM amortization ratio	$\frac{10}{10+20+30} = \frac{1}{6}$	$\frac{20}{20+30} = \frac{2}{5}$	$\frac{30}{30} = 1$
g – CSM amortization (d × f)	\$20.83	\$51.75	\$101.51
h – ending CSM (d - g)	\$104.17	\$77.63	\$0

Row g (CSM amortization) goes to P&L. The amounts \$20.83, \$51.75 and \$101.51 will be released from CSM for years 1, 2 and 3.

CSM will be eventually amortized to zero, reflecting the fact that all insurance services have been provided.

B. How is the CSM Calculated?

1. CSM at initial recognition

a. Under IFRS 17, the CSM at initial recognition is calculated as follows. This generalizes the formula shown in Section I.A.1.c:

Table 9. Steps for Calculating the CSM at Initial Recognition

CSM at initial recognition	*add*	Best estimate present value of all cash flows (i.e. inflows less outflows both in the future and at the date of initial recognition)
	less	Risk adjustment for non-financial risk
	less	The derecognition at the date of initial recognition of any asset for insurance acquisition cash flows
	add/less	The derecognition at the date of initial recognition of any other asset or liability previously recognised for cash flows related to the group of contracts (other than insurance acquisition cash flows)

b. IFRS 17 does not prescribe specific discount rates. Entities must determine their own rates that reflect the characteristics of cash flows and their liquidity.

c. Cash flows must fall within the contract boundary as defined by IFRS 17. For a deep discussion, see Section III.B.

d. Cash flows at the date of initial recognition include:

i. initial premiums

ii. directly attributable acquisition cash flows.

The determination of the date of initial recognition is further explored in Section II.B.

e. The risk adjustment (RA) reflects the uncertainty in the timing and amount of cash flows arising from non-financial risk. The entity is responsible for its determination.

f. New concept: Asset for insurance acquisition cash flows

i. This is a newly introduced concept under IFRS 17 and should **not be confused with DAC** under IFRS 4.

ii. These are cash flows incurred before initial recognition (e.g., fees for marketing to policy holders, advertisement fee).

iii. Under IFRS 17, these are temporarily recognized as assets and then derecognized into the CSM at the date of initial recognition.

iv. Example – accounting entries for insurance acquisition cash flows:

Suppose an acquisition cost of $200 occurred before the initial recognition of the contract, then the insurer would

- debit "Asset of insurance acquisition cash flows" by $200, and
- credit "Cash" by $200.

Upon the initial recognition, the insurer would

- credit "Asset of insurance acquisition cash flows" by $200, and
- debit "CSM" by $200.

The net impact is a credit in "Cash" and a debit in "CSM", and "Insurance acquisition cash flow asset" is derecognized.

g. New concept: Any other asset or liability previously recognized for cash flows

i. This is also a new concept under IFRS 17.

ii. Any pre-recognized assets or liabilities related to future cash flows (other than acquisition cash flows) must be derecognized at the point of contract recognition to avoid double-counting.

iii. Example – accounting entries for prepaid premiums

Suppose the policyholder paid a premium of $200 before the initial recognition of the contract, then insurer would

- debit "Cash" by $200, and
- credit "Other liability previously recognized for cash flows" by $200.

Upon the initial recognition, suppose the PV of cash outflows is $170, RA is $5, then CSM = $200 – $170 – $5 = $25. The insurer would then

- debit "Other liability previously recognized for cash flows" by $200,
- credit "Insurance contract liability - FCF" by $170,
- credit "Insurance contract liability - RA" by $5, and
- credit "Insurance contract liability - CSM" by $25.

The entry "Deferred income liability" is then derecognized.

2. CSM at subsequent measurement

a. While the initial recognition of the CSM is consistent across all types of insurance contracts, the subsequent measurement of the CSM depends on the type of contract. IFRS 17 introduces a fundamental distinction between:

i. Insurance contracts with direct participation features.

ii. Insurance contracts without direct participation features.

Their differences are summarized below:

Contract type	CSM can be adjusted for discount rate and financial risk?	IFRS 17 measurement model	Example product
Insurance contract without direct participation features	No	GMM	Non-profit term life, non-profit whole life
Insurance contract with direct participation features	Yes	VFA if eligibility criteria are met (see Section III.A.2)	Segregated fund, unit-linked saving business

II. Level of aggregation and Recognition

A. Level of Aggregation

1. Overview

a. This section addresses the level of aggregation for direct contracts only.

b. Under IFRS 17, all insurance contracts must be recognized and measured at the group level. Particularly, the CSM must be amortized at the group level, not at the contract level.

c. Three steps to grouping contracts:

i. **Step 1:** Identify portfolios of insurance contracts subject to similar risks and managed together. For example, all critical illness contracts may form single portfolio.

ii. **Step 2:** Divide each portfolio into profitability-based groups.

iii. **Step 3:** Further divide the groups to ensure no group contains contracts issued more than one year apart.

d. Entity must balance proposed granularity with operational practicability.

i. Operation impact:

- Increased granularity requires systems and processes to track more groups.
- More detailed tracking of CSM and LC increases workload.

ii. Financial impact:

- More groups may have different initial recognition dates, leading to different locked-in rates, which affect CSM roll forward under GMM.
- Splitting by profitability may accelerate profit recognition, as each group may have its own coverage unit patterns. Conversely, fewer splits may smooth profit emergence, due to aggregation of coverage units.

iii. Data insights:

- More granularities may reveal hidden trends but could lead to “shadow” groups created for internal accounting, not mandated by IFRS 17.

2. Identifying portfolios
    a. Similar risks
        i. IFRS 17 provides limited guidance; entities must use judgment.
        ii. A common approach:
            - Define “similar risks” as those are dominant, common and non-offsetting between products.
        iii. The entity must consider Supporting evidence for their judgment. It may include metrics from RA calculations or internal/external risk assessments.
    b. Managed together
        i. Again, IFRS 17 allows for judgment.
        ii. Potential indicators include:
            - Contracts processed in the same administrative system
            - Contracts with the same distribution channels
            - Contracts under a shared ALM strategy
3. Dividing portfolio into profitability-based groups
    a. Each portfolio must be divided into at least three probability-based groups:
        i. Onerous contracts
        ii. Contracts without significant risk of becoming onerous
        iii. Remaining contracts
    b. Assessing the “significant risk of becoming onerous” can be challenging:
        i. A common method is to perform stress testing. If contracts remain profitable under stress, they can be classified as “without significant risk”.
        ii. However, judgment is critical. Overly pessimistic assumptions could incorrectly classify all contracts as onerous, defeating the purpose of the test.
    c. Consider the cost-benefit trade-off of group granularity:
        i. Potential benefit:
            - Separating highly profitable contracts may accelerate CSM release, improving short-term P&L (see Section II.A.1.d.ii).
        ii. Potential cost:
            - Operational complexity increases
            - In adverse scenarios, smaller groups with thin CSM buffers may become onerous more easily.

B. The Date of Initial Recognition

1. This section discusses the determination of the initial recognition date for direct contracts only. Considerations for RCH are discussed separately in Section III.G.2.
2. Under IFRS 17, the initial recognition date of a group of insurance contracts is the earliest of the following three dates:
   a. The start of the coverage period of the group.
   b. The date when the first premium becomes due from a policyholder in the group.
   c. The date group becomes onerous.
3. Challenges in practice:
   a. Coverage period timing may be difficult to determine in practice, particularly for batch-issued contracts.
   b. Identifying when a group becomes onerous is also challenging, especially when the policy administration system is not integrated with pricing models.
4. The recognition date in the accounting system may differ from the date used in actuarial cash flow models.
   a. Four common approximations on the date used in actuarial cash flow models include:
      i. The actual recognition date,
      ii. The start of the period,
      iii. The end of the period, and
      iv. An "average point in the period" (e.g, every 15th of a month).
   b. To determine the most appropriate approximation, the entity should evaluate:
      i. **Operational considerations:** for example, if existing actuarial models are designed for month-end recognition, adjusting to month-start may require significant development.
      ii. **Commercial considerations:** for interest-rate-sensitive products, initial recognition timing can materially affect valuations. Using the actual date is preferrable for such products.
      iii. **Calculation Complexity:** some approximations, such as "average point in the period", increase validation workload and may require additional disclosures for auditors and stakeholders. Entities may trade precision for practicality, depending on audit and reporting needs.

III. Measurement

A. VFA eligibility

1. The three measurement models
   a. IFRS 17 introduces three measurement models:

Measurement model	Characteristics	Applicable contracts
GMM (General Measurement Model)	Default model	All contracts not eligible for VFA and PAA
VFA (Variable Fee Approach)	Designed for contracts with direct participation features	Contract satisfying VFA eligibility criteria
PAA (Premium Allocation Approach)	Simplified version of GMM	Short-duration contracts (within one year) or those meeting specific criteria

b. CSM is calculated only under GMM and VFA; there is no CSM under PAA.

c. Initial recognition is handled the same way for GMM and VFA.

d. Subsequent measurement of CSM differs between GMM and VFA:

Scenario	GMM	VFA
Change in discount rate	CSM is not adjusted	CSM is adjusted
Change in other financial assumptions (e.g., asset return)	CSM is not adjusted	CSM is adjusted
Change in non-financial assumptions (e.g., mortality, lapse)	CSM is adjusted if the change relates to future service	CSM is adjusted

e. Using GMM for contracts with direct participation features (that **fail VFA eligibility**) creates technical and operational challenges:

i. Under GMM, the discount rate is locked-in, even if the cash flows vary with investment returns.

ii. This mismatch can lead to inconsistencies in valuation and risk measurement.

2. VFA eligibility

a. Three eligibility criteria (as below):

i. The policyholder participates in a share of a clearly identified pool of underlying items.

- A clearly identified pool of underlying items is crucial to establish contractual linkage.
- Examples (UK)
  - UL insurance: linkage via policy terms
  - WP contracts: linkage via PPFM
- However, outside of UK, many policies base returns on asset performance, but lack a clearly defined pool in the contract — such contracts would fail this criterion.

ii. The entity expects to pay to the policyholder an amount equal to a substantial share of the fair value returns on the underling items.

- IFRS 17 does not define “substantial share”, leaving judgment to entities.
- Entities must design and justify internal tests for “substantial share”.

iii. The entity expects a substantial proportion of any change in the amounts to be paid to the policy holder to vary with the change in the fair value of the underlying items.

- Again, “substantial share” is open to interpretation.
- Entities must design and justify internal tests for “substantial share”.

b. VFA eligibility is determined at inception and is not reassessed thereafter.

c. Contract features where VFA is like to be applied:

Contract Type	VFA Eligibility	Notes
UL Insurance	Likely eligible	Often meets all three criteria
Contracts with minimum return guarantees	Conditional	If guarantees rarely triggered, then likely eligible; otherwise, likely ineligible.
Index-linked payout contracts	Eligible if linkage is contractual	Must clearly define index-based returns in the contract
Contracts with management discretion	Conditional	Management discretion might weaken the contractual linkage

B. Contract Boundaries

1. IFRS 17 vs. Solvency II

a. Under IFRS 17, cash flows fall within the contract boundary if they arise from:

i. **Substantive rights:** the entity can compel the policyholder to pay premiums, or

ii. **Substantive obligations:** the entity must provide insurance contract services.

b. A substantive obligation ends when one of the following occurs:

i. **At policyholder level:** the entity has the practical ability to reassess risks for individual policyholders and reprice benefits accordingly.

ii. **At portfolio level:** the entity has the practical ability to reassess risks across the portfolio and reprice accordingly, **and** the premiums pricing before reassessment does not cover risks after reassessment.

c. Under Solvency II, an entity must justify that cash flows fall within the contract boundary. In contrast, under IFRS 17, the cash flows fall within the contract boundary unless exclusion criteria are met.

i. Therefore, even if the contract boundary is conceptually similar, IFRS 17 produces longer contract boundaries than Solvency II in practice.

2. Example – Unit-linked regular premium workplace pensions

a. Future regular premiums

i. **Solvency II:** Generally outside the contract boundary, as policyholders cannot be compelled to pay the premiums.

ii. **IFRS 17:**

- No substantive rights, as insurers cannot compel payments
- Assessing substantial obligation:
  - **Policyholder-level repricing:** Not practical for UL products.
  - **Portfolio-level repricing:** Possible, but not always satisfied; depends on product T&Cs and admin setup. Also, initial pricing usually assumes future premiums, and this contract likely fails repricing test.

iii. In conclusion the future regular premiums likely fall within the IFRS 17 contract boundary.

b. Premium increments

i. No substantive rights to compel the premium increments.

ii. Assessing substantial obligation:

- **Policyholder-level repricing:** Generally impractical.
- **Portfolio-level repricing:** Depends on product and administration.

iii. In conclusion, some or all premium increments may fall within the contract boundary under IFRS 17, subject to product-specific analysis.

c. Impact on CSM

i. Regular premiums and increments are within the contract boundary:

- Initial recognition: the CSM will include cash flows within the contract boundary, that is, future regular premiums and increments.
- Subsequent recognition: premiums and increments will be included the in measurement of the CSM group of the original contract; difference between "actual" and "expected" will adjust CSM or go to P&L.

ii. Increments are outside the contract boundary:

Scenario	Initial Recognition	Subsequent Recognition
Within the contract boundary	CSM includes future regular increments	Actual vs. expected experience affects CSM or P&L
Outside the contract boundary	CSM excludes future regular increments	Treated as new contracts in a new cohort; a new CSM is created

d. Operational and commercial implications:

i. Solvency II differences:

- IFRS 17 often leads to longer contract boundaries, especially for UL products.

ii. Operational:

- If some increments inside the boundary and others are not:
  - Must track and allocate appropriately (data may be lacking).
  - CSM roll forward requires experience variance analysis and possibly judgmental assumptions.
- For out-of-boundary cash flows:
  - Actuarial systems must support new contracts, cohorts, and CSM creation, which can be complex.

iii. Commercial:

- If increments fall within the contract boundary, they are not new business.
  - This may affect new business KPIs and create internal/external communication challenges.

3. Conclusion

a. IFRS 17 and Solvency II differ in contract boundary definitions, which may lead to divergent measurements.

b. Determining the contract boundary under IFRS 17 requires significant judgment, including:

i. Product features and T&C

ii. Presence of substantive rights of obligations

iii. Pricing methodology

iv. Administrative practices

c. Changes to contract boundaries could have far-reaching operational and commercial implications.

C. Locked-in Assumptions

1. What assumptions are locked in and what are the impacts of locking in?

a. This section addresses which assumptions are considered "locked-in" when calculating subsequent measurements of the CSM under the GMM.

b. Locked-in assumptions refer to those fixed at the initial recognition date and not updated in future measurement of CSM.

c. Under GMM, changes in financial risk do adjust the CSM. However, the treatment of non-financial risks is more nuanced under IFRS 17.

d. IFRS 17 references

i. For contracts without direct participation features:

- Changes in the time value of money and financial risk do not adjust the CSM. Instead, they go to insurance finance income/expense in the P&L.

ii. Assumptions about inflation based on an index or prices or rates are considered as financial risks.

- Cash flows that an entity expects to increase with an index are assumptions that relate to financial risks,
- Otherwise, they are non-financial.

e. There is no clear IFRS 17 guidance on which financial assumptions are locked in, aside from discount rates. Three interpretations are considered:

i. Only discount rates are locked in.

- This interpretation is less likely to be adopted because financial and non-financial assumptions are sometimes intertwined.
- For example, a change in longevity assumption also affects inflation-indexed benefits. If inflation is not locked in, part of the effect would incorrectly impact the CSM.

ii. All financial risks are locked in from initial recognition.

- IFRS 17 is silent on whether all or only historical financial risks should be locked in.

iii. Only prospective financial risks are locked in; historical financial risks are not locked in to reflect actual experience.

- IFRS 17 is silent on whether all or only historical financial risks should be locked in.
- Unlocking historical financial risks would reduce any P&L volatility.

- For example
  - PV of FCF using locked-in inflation: $150
  - PV of FCF using historical inflation: $100
  - A change in non-financial assumption that increase the FCF by 10%

  Then, this would increase the CSM by $10 if actual inflation rates are used.

  If inflation rates are locked in, then the CSM will be increased by $15 and a loss of $5 will be recorded in P&L as insurance finance expense.

  Therefore, we can see that using lock-in financial risks might increase any P&L volatility.

2. Using weightings to calculate locked-in discount rates

   a. This section explains how to determine the lock-in rate at initial recognition under GMM

   b. Purpose of locked-in rate

      i. Used for interest accretion on the CSM

      ii. Used to assess PV of FCF changes from non-financial assumptions

   c. IFRS 17 permits but does not require the use of weighted discount rates

      i. **Single recognition date:** Apply the market rate at that date.

      ii. **Multiple recognition dates:** Use weighted average to ensure group representativeness.

      - Choices of weights may include premiums and best estimate liability (BEL).

   d. Three weighting methods:

Method	Description	Pros & Cons
Weighted Average	Based on recognition dates and a weighting factor	Most accurate Operationally complex
Simple Average	Unweighted average of discount rates	Easy to compute Ignores size importance of contracts
Start-of-period Rate	Apply the rate at the start of the period	Easiest Ignores interest rate changes within the period (not suitable for volatile interest movements)

   Example:

   Consider contracts issued Jan 1st (3%), Jan 15th (2.9%) and Jan 31st (2.8%).

   - Weighted average: close to 2.9%, if Jan 15th had highest volume
   - Simple average: (3% + 2.9% + 2.8%) / 3 = 2.9%
   - Start-of-period rate: 3% (Jan 1st)

   e. The selected lock-in rate affects the timing of CSM release. However, any difference in timing be offset by the insurance finance income and expense, keeping total profits unchanged.

D. Subsequent Measurement

1. Overview

There are key differences between how CSM roll forward is performed under the GMM and VFA.

Table 10. Adjustments Required to the CSM at Subsequent Measurement – GMM

CSM at subsequent measurement (GMM)	CSM at start of reporting period	
	add	CSM in respect of new business
	add	Interest accretion based on the locked-in discount rate
	add/less	Changes relating to future service arising from, e.g.: • non-economic assumption updates, • impact of experience variances on fulfilment cash flows, • modelling changes, • premium variances include premium related cash flows such as premium-based taxes, • acquisition expense variances, • non-distinct investment component variances
	add/less	The effect of any currency exchange differences
	less	Release of CSM in profit or loss (amortisation of the CSM)
	CSM at end of reporting period	

Table 11. Adjustments Required to the CSM at Subsequent Measurement – VFA

CSM at subsequent measurement (VFA)	CSM at start of reporting period	
	add	CSM in respect of new business
	add/less	Changes in the entity's share of the fair value of the underlying items as well as changes relating to future service arising from, e.g.: • economic and non-economic assumption updates, • impact of experience variances on fulfilment cash flows. • modelling changes. • premium variances include premium related cash flows such as premium-based taxes. • acquisition expense variances. • non-distinct investment component variances,
	add/less	The effect of any currency exchange differences
	less	Release of CSM in profit or loss (amortisation of the CSM)
	CSM at end of reporting period	

2. Adjustments for experience adjustments

a. Under IFRS 17, only changes in future service can adjust the CSM.

b. In general, experience variances relate to current or past service, and hence are recognized in P&L. However, if they affect future service cash flows, they can adjust the CSM.

i. For example, suppose more people were dead in the current year, then

- ♦ that would affect the FCF because the remaining people become less. FCF decreases, and the CSM decreases, and
- ♦ the experience variance related to the current year goes to P&L as a loss.

c. Contracts without direct participation features

Type of insurance	Impact on CSM
Premium experience variance	Future service portion adjusts CSM The remaining portion goes to P&L
Investment component experience variance	Adjust CSM
Risk adjustment experience variance	Future service portion adjusts CSM The remaining portion goes to P&L
Discretionary cash flows	If related to future service, adjusts CSM Otherwise, goes to P&L

d. Contract with direct participation features

i. CSM adjustments must reflect the the entity's share of the underlying items (i.e., the "variable fee").

ii. If any experience variance affects the variable fee adjusts the CSM.

iii. Key difference from GMM:

- Under VFA, changes in time value of money and financial risks not arising from the underlying items adjusts the CSM, because they affect future services.

3. Participating contracts measured through the GMM (not VFA eligible)

a. Some participating contracts fail VFA eligibility criteria and must be measured under GMM.

b. Even though VFA does not apply, the future cash flows still vary with underlying items, unlike fixed-cash-flow GMM products.

c. A sensible workaround: Use actual cash flows but apply the locked-in rate.

i. Reflects updated contract status (i.e., policyholder behaviours)

ii. Avoids large mismatches between expected and actual experience

iii. Preserves GMM's requirement of a locked-in rate

4. Order of adjustments

a. IFRS 17 does not prescribe a strict order of CSM adjustments—except that CSM amortization (release to P&L) must always be the last step.

b. Two practical options:

Timing of experience variance adjustment	Pros	Cons
At beginning of the period (before interest accretion)	Reflect experience variance in time	Alter coverage unit basis, affecting amortization pattern in the current period
At end of period (after interest accretion)	Simpler to implement	Delay recognition of risks in P&L; less timely reflection of experience

Whatever order of adjustments an entity chooses, it must be consistent over time.

E. Coverage Units

1. Introduction

a. The CSM represents the unearned profit from a group of insurance contracts. It is recorded as alibility on the balance sheet and is recognized in P&L as the entity provides insurance services.

b. Insurance services include:

i. Insurance coverage

ii. Investment-return services

iii. Investment-related services

c. The CSM is allocated equally to each coverage unit to be provided in the current and future periods. The corresponding proportion of CSM is then recognized as profits based on coverage units allocated in each period.

i. Example:

Year	Coverage units	Remaining CSM	CSM amortization ratio	CSM amortization
1	100	500	100/300 = 33%	500 × 33% = 165
2	100	335	100/200 = 50%	335 × 50% = 167.5
3	100	167.5	100/100 = 100%	167.5

d. IFRS 17 provides flexibility in determining coverage units but requires disclosure of the methodology.

i. The coverage unit should be a good proxy to reflect characteristics of insurance service.

- For example, if a policy starts to pay its benefit after year 5 (e.g., survival benefits), then the coverage unit allocation should be inclined to year 5 as well.

ii. Whether to include time value of money in the coverage units depends on the entity's judgments. Either approach is permitted, as long as it is applied consistently over time.

2. Identification of coverage units

a. Under IFRS 17, the number of coverage units is based on two quantities:

i. Quantity of services provided

ii. Coverage period

These are separate concepts and will be considered in detail below:

b. Coverage period

i. The coverage period should consider:

- The actual term of the policy, and
- Adjustments for expected decrements (e.g., lapses and claims).

ii. Example:

A 5-year endowment policy with a sum insured of $100,000 payable on death. Annual premiums are payable at the start of each year.

The policyholder has an option stop paying premiums after paying a minimum of two premiums. If this option is exercised, the sum insured will be reduced proportionately in line with the number of premiums paid.

Suppose 30% of policies are expected to exercise the option at the end of year 2. Under this scenario, the coverage units will be calculated as the table below:

Table 12. Example of Coverage Units Calculation

Policy year	1	2	3	4	5
Quantity of benefits – in force (a)	£100,000	£100,000	£100,000	£100,000	£100,000
Probability the policy is in force (b)	1	1	0.7	0.7	0.7
Quantity of benefits – paid-up (c)	0	0	£40,000	£40,000	£40,000
Probability the policy is paid-up (d)	0	0	0.3	0.3	0.3
Coverage units (CU) (e)= ((a) × (b)] + [(c) × (d))	100,000	100,000	82,000	82,000	82,000

This approach provides flexibility to reflect actual policyholder behaviour. Adjustments for actual experience in coverage units are discussed in Section III.E.5.

c. Quantity of benefits

i. IFRS 17 does not prescribe a universal method to estimate the quantity of benefits, leading to interpretational questions.

ii. IASB clarified that an insurer should assess the "insurance contract service" provided (i.e., the three components discussed Section III.E.1.b).

d. Insurance service with similar types of coverage

i. "Similar types of coverage" refers to contracts with only one single coverage type.

ii. The quantity of benefits should represent the amount of service provided, not just expected claims. A suitable measure is often the "sum at risk" (i.e., actual dollar amounts).

iii. The following methods are **not** suitable for reflecting the amount of service provided.

- Using level premiums as a proxy (unless the benefits are level).
- Using actuarially expected cash flows (e.g., $q_x \times$ sum insured)—this focuses on incurred claims, not total service.
- Using only number of contracts—this ignores differences in benefit size across contracts.

e. Insurance service with different types of coverage

i. A contract might have a combination of multiple coverages (e.g., lump sum death benefit, critical illness annuity, accelerated payments or waiver of premiums).

ii. The quantity of benefits must reflect all types of coverage, appropriately weighted. Entities must a reasonable way to combine these into the coverage unit calculation.

f. Investment-related or investment-return services

i. These are not traditional insurance coverages, but more like asset management services, requiring judgment.

ii. The entity needs to consider whether the investment-related or investment-return services depends on the size of the policy. Two approaches:

- **Equal service:** Assume the same service level to all policyholders.
- **Scaled service:** Service level is proportional to account value or premium size.

iii. The chosen approach must be justified and consistently applied.

g. Combination of insurance and investment services

i. An important example of this type of contract is deferred annuity:

- Accumulation phase with premiums and account value buildup
- Annuitization guaranteed annuity payments
- Other features like withdrawal rights and death benefits

ii. Annuity payments:

- Begin at a future date (commencement date)
- Insured event is "policyholder surviving to receive payments"
- Coverage units start after the commencement date

iii. The ability to withdraw the account balance to another provider

- This could be considered as an investment-return service if the following criteria are met, namely:
  - An investment component exists, or the policyholder has a right to withdraw an amount.
  - The entity expects the investment component or the amount the policyholder has a right to withdraw to include an investment return.
  - The entity expects to perform investment activity to generate that investment return.
- A suitable measure of the quantity of benefits would be the amount the policyholder has the right to withdraw (i.e. the account value). The coverage period would be the period during which the policyholder has a right to withdraw an amount.

iv. Investment service during the deferral period but that cannot be surrendered or transferred

- If the policyholder does not have a right to withdraw, this service cannot be considered as investment service. Instead, it is an enhancement of the annuity benefit for earning interest.
- Therefore, this service is considered as insurance coverage service because it is contingent upon the insured event.
  - No CSM maybe recognized during the deferral period, rather it may only be recognized in the coverage period after the commencement date.

v. A death benefit that pays out a lump sum if the policyholder dies during the deferral period

- This type of service is considered as insurance coverage service.
- The quantity of benefits would be the net amount at risk (i.e., NAAR = death benefit – account value) during the deferral period.

vi. Combining the quantity of benefits to determine the coverage units

- The coverage units must reflect all services provided (i.e., insurance + investment).
- IFRS 17 does not provide detailed requirements about how to determine the relative weightings for all the services. Judgment is required.

h. Practical examples

Following examples show the quantity of benefits based on various product types. This table is not intended to be prescriptive or exhaustive. Entity's judgment is always the priority in practice.

Table 13. Example measure of the Quantity of Benefits by Type of Product

Product type	Likely measurement model	Example measures of the quantity of benefits
Term assurance with only death benefits	GMM	Sum assured payable on death
Health product with cover provided on specified types of illness	GMM	Maximum amount payable on detection of illness for all illnesses covered
Life cover with more than one benefit	GMM	Sum of all insurance cover provided under contract
Deferred annuity	GMM	Amount payable on death during deferment period (in excess of the transfer value) and the annuity amount payable post-vesting date
Life contingent annuity product	GMM	Annuity amount payable in each period
Life contingent annuity with return of premium on death	GMM	Annuity amount payable in each period plus amount payable on death (i.e. return of premium)
Indirect participating products	GMM	Guaranteed death benefit
With-profits savings product	VFA	Amount payable on death, i.e. sum assured + bonuses)
Unit-linked savings product	VFA	Amount payable on death, e.g. fund value + sum at risk OR higher of sum assured and fund value as defined in policy documents.

3. Discounted vs. undiscounted coverage units
    a. IFRS 17 does not specify whether to apply time value of money in determining coverage units. Judgement is required, supported by documentation and disclosure.
    b. As the coverage units get smaller after applying the discount rate, the release of CSM becomes faster for discounted coverage units. Moreover, the interest accretion becomes smaller for discounted coverage units.
4. Materiality of discounted vs. undiscounted coverage units
    a. This materiality depends on several factors, in particular:
        i. The duration of the contract. The longer the duration (e.g., whole life), the greater the materiality.
        ii. The prevailing discount rate. The larger the rate, the greater the materiality.
        iii. Certain contractual features (e.g, index-linked death benefit)

b. Example – whole life insurance

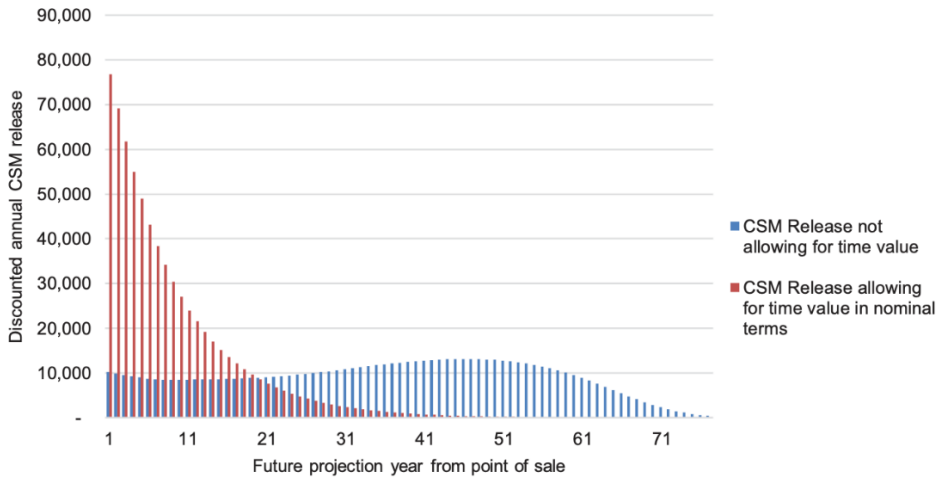

Figure 3. Comparison of discounted annual CSM releases for a whole of life insurance contract example, both allowing and not allowing for the time value of money in nominal terms in the equal allocation of CSM to coverage units.

In the graph above, CSM is released faster if time value of money is included. A large amount of CSM is released upfront with little remaining. On the other hand, CSM release is more inclined to being level if time value of money is not included, with CSM release shifted towards the back end.

Since IFRS 17 allows the freedom of judgments, some entities follow an "intermediate" approach where the coverage units are discounted at real interest rate. The result is shown below:

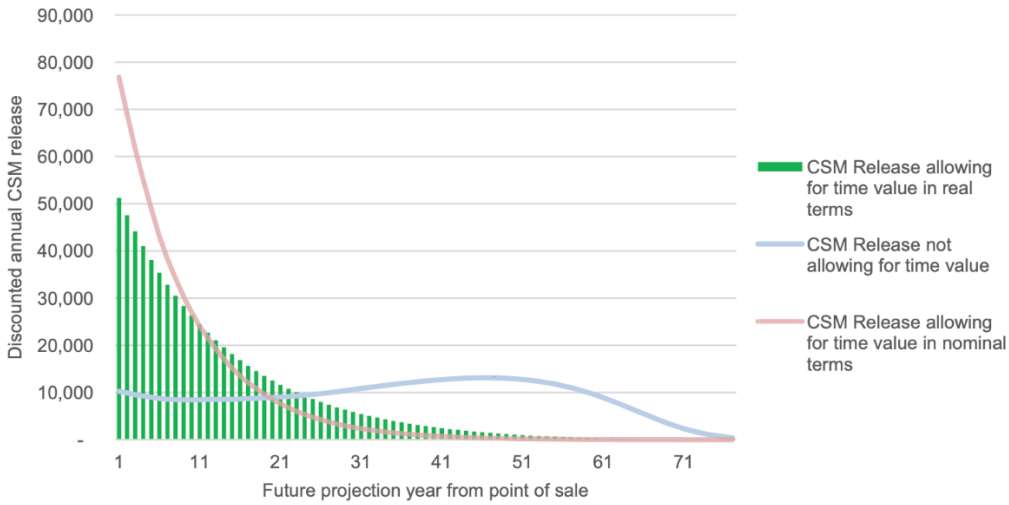

Figure 4. Discounted annual CSM release for an intermediate approach to allowing for the impact of time value of money compared to the CSM releases when explicitly both allowing and not allowing for the time value of money in nominal terms.

This intermediate approach shows in-between results between the discounted and the undiscounted approaches. It might be used for long-term contract with inflation-linked benefits.

c. Whichever approach to use, the entity needs to disclose and justify the method used.

5. Reassessment of future coverage units

a. This section explores angles to reassess future coverage units.

b. IFRS 17 requires reassessment of future coverage units at each reporting date, based on updated assumptions.

c. Any adjustments to future coverage units apply as at the end of the period and must not be recalculated retrospectively for the start of the period.

d. Modelling simplifications are made as to the timing of decrements do not track the timing as they occur in the real world. The simplification method depends on judgments.

e. Example – two options

Consider a group of insurance contracts comprising of 100 policies each with a benefit payable of 1000 units.

At inception, it is expected that 10 policyholders to die at the end of each year.

After 2 years, 10 policyholders died in year 1 and 24 policyholders died in year 2.

The companies consider two possible options as the graph shown below:

Table 17. Example of Options when Determining Coverage Units

Policy year	1	2	3	4	5
Number of policies at start	100	90	66	56	46
Option A	100,000	90,000	66,000	56,000	46,000
Option B	100,000	78,000	66,000	56,000	46,000

i. **Option A:** do not update the coverage unit for experience variance occurred in the current period

- Option A assumes that all policyholders at the beginning of the period receive service, no matter decrements occur later in the period or not.

ii. **Option B:** update the coverage units as the average between the beginning and the end of the current period (i.e., 78000 = (90000 + 66000)/2).

- Option B assumes that policyholders should receive partial services. The quantity of service remains dynamic during each period.

The purpose of this example is not for the readers to memorize Options A and B. It is an illustrative example for reassessment of coverage units only. The reassessment method always depends on entity's judgment in practice.

F. Loss Components (LC)

1. This section highlights the importance and mechanics of systematic reversing LC.

2. IFRS 17 requires an asymmetric treatment of profitable and onerous groups of direct contracts.

a. For profitable groups, the profits are released over time via the CSM.

b. For onerous groups, the LC must be recognized in the P&L immediately.

i. The LC must be reversed systematically over the coverage period, ensuring it reaches zero by the end of the contract term.

3. Why do entities systematically reverse LC?

   a. Entities systematically reverse LC for two reasons below:

      i. Prevent the recording of amounts as revenue which have not been received.

      ii. Avoid the re-recording of amounts as service expense which have already been recognized.

   b. Example

      Consider a 2-year term insurance contract where:

      - An annual premium of $1 is payable at the start of each year.
      - Expected claims and expenses of $30 and $70 are paid at the end of each year.
      - The RA and the impact of discounting are negligible.
      - Actual experience is exactly in line with expected.

   The FCF is shown below:

Table 18. Example of Fulfilment Cash Flows for a 2-Year Term Insurance Contract

Cash flow	Year 1	Year 2	Total
Premium	£1	£1	£2
Claims/expenses	−£30	−£70	−£100

There is a LC of $98 at the initial recognition.

First, consider how the P&L would look like if systematic reversals of LC did not exist:

Table 19. Example of Insurance Service Result if Systematic Reversals of Loss Components did not exist

	Year 1			
	Inception	End of year	Year 2	Total
Insurance revenue	**£0**	**£30**	**£70**	**£100**
Release of expected claims and maintenance expenses	–	£30	£70	£100
Release of CSM	–	–	–	–
Insurance service expenses	**−£98**	**−£30**	**−£70**	**−£198**
Establishment of loss component	−£98	–	–	−£98
Actual incurred claims and maintenance expenses	–	−£30	−£70	−£100
Insurance service result **Insurance revenue less insurance service expenses**	**−£98**	**£0**	**£0**	**−£98**

There are two problems in the P&L:

- The total insurance revenue of $100 far exceeds the premium received of $2, resulting in an overstated revenue.
- The total reported insurance service expense of $198 double counts the actual claim paid of $100 and previously recognized LC of $ 98.

These inconsistencies arise because future expected losses were already recognized upfront as LC, yet future revenues and expenses are also being recorded again—leading to double-counting.

With LC reversal, the P&L becomes

Row	Item	Year 1		Year 2	Total
		Inception	End of year		
1	**Insurance revenue = (2) + (3) + (4)**	**£0**	**£0.6**	**£1.4**	**£2**
2	Release of expected claims and maintenance expenses	–	£30	£70	£100
3	Less amounts allocated to loss component (determined by the systematic allocation ratio; see calculation notes (a) and (b) below)	–	−£29.4	−£68.6	−£98
4	Release of CSM	–	–	–	–
5	**Insurance service expenses = (6) + (7) + (8)**	**−£98**	**−£0.6**	**−£1.4**	**−£100**
6	Establishment of loss component	−£98	–	–	−£98
7	Reversal of loss component (equal and opposite of items in row 3)	–	£29.4	£68.6	£98
8	Actual incurred claims and maintenance expenses	–	−£30	−£70	−£100
9	**Insurance service result** **Insurance revenue less insurance service expenses**	**−£98**	**£0**	**£0**	**−£98**
10	**Loss component balance (shown for information only, this does not appear in P&L) (cumulative balance of items in rows 6 and 7)**	**−£98**	**−£68.6**	**£0**	**–**

- With LC reversal, insurance revenue is first used to offset LC. This solved the first problem.
- LC is reversed to zero at the end of the coverage period, which avoids re-recording of the service expenses that have already been recognized via LC. This solved the second problem.

With LC reversal, the P&L is now fixed with correct amount of total insurance service revenue and total insurance service expense.

One problem is remaining: how is the amount of LC reversal (i.e., $29.4 and $68.6) calculated? This will be explored next.

4. How should LC be systematically reversed?
   a. IFRS 17 does not mandate a specific method for LC reversal.
      i. However, the approach must be a systematic, formulaic approach.
      ii. The reversal mechanism must have a connection with certain items that are recognized in the P&L.
   b. We will introduce three possible methods as below:

i. Method 1

This example is a variation of the example used in the previous section.

Assumptions:

- An annual premium: $1 at the start of each year.
- Expected claims: $30 and $50 are paid at the end of each year.
- Expected expenses of $8: incurred at the end of each year.
- The RA at inception: $4, released evenly each year.
- Interest rate: 0%.
- Actual = expected

This gives the fulfilment cash flows at initial recognition and subsequent measurement as below:

Table 21. Example of Fulfilment Cash Flows at Initial Recognition in line with Method used in IFRS 17 Illustrative Example 8

	Time		
	0	1	2
PV of premiums	−£2	−£1	£0
PV of claims	£80	£50	£0
PV of expenses	£16	£8	£0
Risk adjustment	£4	£2	£0
Fulfilment cash flows	£98	£59	£0

The contract is onerous at initial recognition and consequently, the entity will establish an LC and recognized a loss in the P&L of $98.

How should this LC be systematically reversed?

One way to calculate the SAR (systematic allocation ratio) is

$$SAR = \frac{Opening\ LC}{PV\ of\ cash\ outflows + RA\ balance}$$

which gives

Table 22. Example of Systematic Allocation Ratio Calculation

	Year 1	Year 2
SAR	$= \frac{£98}{£80 + £16 + £4}$ $= 98\%$	$= \frac{£58.8}{£50 + £8 + £2}$ $= 98\%$

Mathematical proofs also show that this choice of SAR will reverse LC to zero. We will not show the proofs here.

Applying this SAR to the LC reversal, we have

Table 23. Example of Opening and Closing Loss Component Calculation

	Year 1	Year 2
Opening loss component	*£98*	*£58.8*
Systematic allocation of expsected claims release	$= £30 \times 98\% \times -1 = -£29.4$	$= £50 \times 98\% \times -1 = -£49$
Systematic allocation of expected expenses released	$= £8 \times 98\% \times -1 = -£7.84$	$= £8 \times 98\% \times -1 = -£7.84$
Systematic allocation of risk adjustment released	$= £2 \times 98\% \times -1 = £1.96$	$= £2 \times 98\% \times -1 = £1.96$
Closing loss component	*£58.8*	*£0*

To reconcile to IFRS 4, consider the definition of LC:

$$LC = PV\ of\ cash\ outflows + RA - PV\ of\ cash\ inflows.$$

Rearrange,

$$PV\ of\ cash\ inflows = PV\ of\ cash\ outflows + RA - LC.$$

Based on the equation above, after LC is excluded from total cash outflows and RA, the result is the total cash flows which is consistent with premium revenue under IFRS 4.

Therefore, as long as LC can be fully reversed to zero, total profit under IFRS 17 is the same as that under IFRS 4. Different LC reversal methods only change the pattern of LC reversal but the total profit remains the same.

We will see the remaining two LC reversal methods.

ii. Method 2

The second alternative way to calculate the SAR (systematic allocation ratio) is to assume SAR is 100%:

Table 24. Example of Setting the Systematic Allocation Ratio to 100% in the First Year

	Year 1	Year 2
SAR	100%	$= \frac{£58}{£50 + £8 + £2}$ $= 96.67\%$

To ensure that LC is finally reversed to zero, the last year SAR might not be 100%

Applying this SAR to LC reversal, we have

Table 25. Example of Opening and Closing Loss Component Calculation using a Systematic Allocation Ratio of 100% in the First Year

	Year 1	Year 2
Opening loss component	£98	£58
Systematic allocation of expected claims release	$= £30 \times 100\% \times -1 = -£30$	$= £50 \times 96.67\% \times -1 = -£48.33$
Systematic allocation of expected expenses released	$= £8 \times 100\% \times -1 = -£8$	$= £8 \times 96.67\% \times -1 = -£7.73$
Systematic allocation of risk adjustment released	$= £2 \times 100\% \times -1 = £2$	$= £2 \times 96.67\% \times -1 = £1.93$
Closing loss component	£58	£0

iii. Method 3

The second alternative way to calculate the SAR (systematic allocation ratio) is to set the SAR to equal to the CSM amortisation ratio, which gives

Table 26. Example of Setting the Systematic Allocation Ratio to be equal to the CSM Amortisation Ratio

	Year 1	Year 2
CSM amortisation ratio	50%	100%
SAR	50% (equal to the CSM amortisation ratio above)	$= \frac{£78}{£50 + £8 + £2}$ $= 130\%$

To ensure that LC is finally reversed to zero, the last year SAR might not be 100% Moreover, CSM amortization ratios can still be calculated based on coverage units even if there is no CSM.

Applying this SAR to the LC reversal, we have

Table 27. Example of Opening and Closing Loss Component using a Systematic Allocation Ratio equal to the CSM Amortisation Ratio

	Year 1	Year 2
Opening loss component	*£98*	*£78*
Systematic allocation of expected claims release	$= £30 \times 50\% \times -1 = -£15$	$= £50 \times 130\% \times -1 = -£65$
Systematic allocation of expected expenses released	$= £8 \times 50\% \times -1 = -£4$	$= £8 \times 130\% \times -1 = -£10.4$
Systematic allocation of risk adjustment released	$= £2 \times 50\% \times -1 = £1$	$= £2 \times 130\% \times -1 = £2.6$
Closing loss component	£78	£0

iv. Advantages and disadvantages of Methods 1, 2 and 3

Method	Description	Advantages	Disadvantages
1	LC reversal based on the SAR ratio	Most intuitive Conform to the Standard Accurate	Computationally intensive (e.g, update SAR in each period)
2	LC reversal based on 100%	Simple and clear Straightforward to follow	Reversing LC to zero too early, causing negative revenue later
3	LC reversal based on CSM amortization ratios	Modelling consistency between CSM and LC User friendly while pragmatic	Not suitable for products where coverage units are difficult to determine

5. Deeper considerations

a. SAR may exceed 100% in two common scenarios:

i. **Scenario 1:**

- The SAR chosen is not optimal for full LC reversal across all periods. As a result, the SAR in the final period may need to exceed 100% to ensure the LC balance is fully extinguished.
- This is the case for the Method 3 above.

ii. **Scenario 2:**

- There could be an experience variance relating to future service that adjusts the LC without affecting the PV of outflows or the RA (e.g., decrease in actual premiums received).

b. Should OCI be systematically allocated to the LC?

If an entity applied the OCI disaggregation approach, then should it allocate OCI to reverse the LC?

i. First consideration:

- If part of LC is created due to PV of outflows, and that portion flows through OCI, then that OCI portion should ideally be used to reverse the LC.
- However, OCI may include unrelated items—thus, only the OCI portion tied to PV of outflows should be used.

ii. Second consideration:

- The purpose of OCI disaggregation is to reduce accounting mismatch. Entities probably keep using this option.
- Entities might instead prefer to adjust the SAR in the final period (as in Methods 2 and 3), ensuring LC is fully reversed without using OCI.

iii. **Third consideration:**

- The three methods in previous sections ignore interest rates. When interest rates are present, SAR will naturally fluctuate.
- Allocating some of insurance finance income and expenses to OCI may help stabilize SAR fluctuation. In practice, the fluctuation is quite marginal.

c. How does the timing of assumption updates affect the SAR?

i. The SAR formula in Method 1 should be adjusted for assumption updates:

$$SAR = \frac{adjusted\ opening\ LC}{revised\ PV\ of\ cash\ outflows + revised\ RA\ balance}$$

ii. The order of adjustment should be consistent with that for CSM.

iii. Impact of assumption updates on LC and P&L:

- Unfavourable assumption changes:
  - increase LC
  - immediate loss in P&L via “increase to the loss component”
- Favourable assumption changes:
  - decrease the LC
  - immediate gain in P&L via “reversal of loss component line”
  - if the gain is larger than the LC, then the LC is fully extinguished, and the remaining part is used to establish a positive CSM

6. Current vs. locked-in discount rates: which to use for LC reversal?

   a. IFRS 17 requires using locked-in rates for CSM amortization, but it is unclear whether the same applies to LC reversal.

   b. Two options:

Option	Pros	Cons
Locked-in rates	align with CSM consistent treatment (no need to justify the rate again)	less realistic
Current rates	more realistic reflect actual economic reality	require justification diverge from CSM treatment

   c. Example

   This example shows the tracking of a LC for both options. Consider the following:

   - A 3-year policy
   - Single premium: $10,000
   - Claims at the end of each year: year 1 = $1,000; year 2 = $1,000; year 3 = $10,000
   - Discount rate at initial recognition: 5%
   - LC at initial recognition: $498.
   - At the start of year 2, the discount rates are reviewed and set to 3% going forward.
   - The SAR used in this example is

$$SAR = \frac{beginning\ lC}{PV\ of\ cash\ outflows}$$

   The tracking of LC under the first option:

Table 29. Scenario A: changes in Fulfilment Cash Flows Measured at Locked-in Rates

		Year			
		1	2	3	
	Opening PV of claims @ 5%	£10,498	£10,023	£9,524	see note 1
	Unwind of discount rate @ 5%	£525	£501	£476	
	Release of expected claims	(£1,000)	(£1,000)	(£10,000)	
	Closing PV of claims @ 5%	£10,023	£9,524	£0	
	Systematic allocation ratio	4.74%	4.74%	4.74%	
Loss component at start of period		£498	£475	£452	
Amounts allocated to loss component	Release of expected claims	(£47)	(£47)	(£474)	
	Unwind of discount rate	£25	£24	£23	
	Changes in discount rate	–	–	–	see note 2
Loss component at end of period		£475	£452	£0	

To better understand the calculation, take year one for example:

- Opening PV of claims is calculated at the locked-in rate 5%:

$$Opening\ PV\ of\ claims = \frac{1000}{1.05} + \frac{1000}{1.05^2} + \frac{10000}{1.05^3} = 10498.$$

- Unwind of discount rate is calculated at the locked-in rate 5%:

$$Unwind\ of\ discount = Opening\ PV\ of\ claims \times 5\% = \$525.$$

- SAR:

$$SAR = \frac{498}{10498} = 4.74\%.$$

- Release of expected claims allocated to LC is calculated at the locked-in rate 5%:

$$Release\ of\ expected\ claims\ allowcated\ to\ LC = 1000 \times 4.74\% = \$47.$$

- Unwind of discount rate allocated to LC is calculated at the locked-in rate 5%:

$$Unwind\ of\ discount\ rate\ allocated\ to\ LC = 525 \times 5\% = \$25.$$

Readers may verify years 2 and 3 in a similar manner.

Now, suppose the entity follows the second position and updates the discount rate of 3% at the start of year 2, then the tracking of LC becomes:

Table 30. Scenario B: changes in Fulfilment Cash Flows Measured at Current Rates

		Year		
		2	3	
	Opening PV of claims @ 3%	£10,397	£9,709	
	Unwind of discount rate @ 3%	£312	£291	
	Release of expected claims	(£1,000)	(£10,000)	
	Closing PV of claims @ 3%	£9,709	£0	
	Systematic allocation ratio	4.57%	4.75%	see note 3
	Loss component at start of period	£475	£461	
Amounts allocated to loss component	Release of expected claims	(£46)	(£475)	
	Unwind of discount rate	£14	£14	
	Changes in discount rate	£17	–	see note 4
	Loss component at end of period	£461	£0	

- Opening PV of claims is calculated at the updated rate 3%:

$$Opening\ PV\ of\ claims = \frac{1000}{1.03} + \frac{10000}{1.03^2} = 10397.$$

- Unwind of discount rate is calculated at the updated rate 3%:

$$Unwind\ of\ discount = Opening\ PV\ of\ claims \times 3\% = \$311.$$

- SAR:

$$SAR = \frac{475}{10397} = 4.57\%.$$

- Release of expected claims allocated to LC is calculated at the updated rate 3%:

$$Release\ of\ expected\ claims\ allowcated\ to\ LC = 1000 \times 4.57\% = \$46.$$

- Unwind of discount rate allocated to LC is calculated at the updated rate 5%:

$$Unwind\ of\ discount\ rate\ allocated\ to\ LC = 311 \times 4.57\% = \$14.$$

- Changes in discount rate:

$$Change\ in\ discount\ rate$$
$$= (Opening\ PV\ of\ claims - Opening\ PV\ of\ claims\ if\ the\ rate\ were\ 5\%) \times SAR$$
$$= (10397 - 10023) \times 4.57\% = \$17.$$

G. Reinsurance Contract Held (RCH)

1. Setting consistent assumptions

a. The consistency requirements do not mean the assumptions have to be the same between RCH and underlying direct contracts. However, any differences must be clearly justified, requiring professional judgment.

b. Maintaining assumption consistency is critical, as it directly impacts cash flow projections, discounting, and ultimately the CSM.

c. The consistency requirement of RCH applies at the initial recognition.

d. As assumptions are updated over time, further justification is required during subsequent measurements. Any inconsistency may lead to P&L mismatches between the RCH and the underlying direct contracts.

e. Example – mortality assumptions

i. An insurer may apply different mortality assumptions in RCH than those used in the underling direct contracts to reflect the non-performance risk by the reinsurer.

ii. Such adjustments must be well-documented to satisfy the consistency principle.

f. Example – discount rate assumptions

i. An insurer may apply different discount rate curves assumptions for RCH and the underlying direct contracts because of the initial recognition dates are different. However, the curves are both risk-free curve without liquidity premiums under the same methodology.

ii. Documentation needs to be in place to justify this adjustment as consistent.

2. Recognition date and contract boundaries

a. IFRS 17 states that all cash flows within the contract boundary (i.e., arise from substantive rights and obligations) must be included in the fulfillment cash flows.

b. Reinsurance treaties often include a notice period, which affects contract boundaries:

i. The reinsurer must provide notice (e.g., for termination or pricing changes), during which it remains obligated to accept ceded business.

ii. Conversely, the cedant must also give notice if it intends to stop ceding or switch reinsurers.

iii. Any business ceded beyond the notice period will be treated as a new RCH, with a new recognition date and possibly a new group of contracts.

c. As a result, reinsurance cash flows relating to future business expected to be written within the notice period may fall within the RCH boundary, due to the existence of substantive obligations during that time.

d. Example – challenges brought about by different contract boundaries

Suppose that as of December 31, 2012, an insurer expects to issue one new direct insurance contract per month. It also has a reinsurance treaty with a 3-month notice period covering new business. This scenario introduces several practical challenges:

i. **Accounting mismatch:**

- The contract boundary of the RCH is longer than that of the direct contracts.
- As of Dec 31, 2012, the ceded cash flows of the next three expected direct contracts (Jan–Mar 2013) are recognized under the RCH, while the direct contracts themselves are not yet recognized.
- This creates a timing mismatch between ceded and unceded cash flows.

ii. **Operational complexities:**

- The insurer would need to determine assumptions for the volume and mix of the future new business in the coming three months.
- The model must be designed to incorporate this.

iii. **Disclosure of commercially sensitive information:**

- Including assumptions for the volume and mix of future new business may face the risk of disclosing sensitive information.
- This risk is generally lower for mature books.

e. Example – business ceded beyond the notice period

Same example as above, suppose three months later (as of March 31, 2023), neither the reinsurer nor the insurer opts to terminate the reinsurance treaty. The treaty continues by default. Then:

i. The insurer must recognize a new group of RCH treaties on March 31, 2023, with a 3-month notice period (extend to June 29, 2023). In other words, going forward, the reinsurer will recognize a new RCH group every 3 months, covering the new business expected to be written during the subsequent notice period.

ii. Under IFRS 17, RCH cannot be extended but new treaties can be recreated to cover the next period.

f. Example – recognition date is not synchronized with the reporting date

Same example as above, except that suppose the RCH were recognized on November 30, 2022. This creates a reporting mismatch on December 31, 2022:

- The contract boundary of this RCH extends to February 28, 2023, so the cash flows for January and February are included.
- However, cash flows for March cannot yet be recognized, as the existing contract boundary ends in February.
- At the same time, IFRS 17 prohibits extending contract boundaries in advance, leaving a grey area for the March business.

Workarounds:

i. Synchronize recognition and reporting dates. For example, shift the RCH recognition date to December 31, 2022, while retaining the 3-month notice period.

ii. Alternatively, modify the notice period duration or reword the reinsurance treaty to align with reporting periods more smoothly.

3. Aggregation

a. This section explores how RCH are grouped under IFRS 17.

b. Differences between direct contracts and RCH:

i. RCH can have a positive or negative CSM.

ii. Underlying direct contract business may be covered by multiple RCH.

c. Under IFRS 17, RCH must be grouped into one of the following three profitability-based groups:

i. RCH groups are in net gain position at initial recognition

ii. RCH groups that do not have a significant possibility of net gain at initial recognition.

iii. All other RCH.

d. TRG further clarifies that RCH can be disaggregated into components if all of the following conditions are met:

i. The risks cover by the components are independent.

ii. The components can lapse separately.

iii. The components can be repriced separately.

e. Example – two reinsurance contracts with different risks should not be in the same group

An insurer enters two distinct reinsurance contracts in the same year:

- A quota share contract for a block of term insurance
- A longevity swap for a blook of annuities.

Since these contracts cover different risks, they should be classified into separate groups under IFRS 17.

f. Example – two contracts with same management goals might be in the same group

An insurer enters two reinsurance contracts with the same reinsurer, both covering the same cohort of term insurance:

- A quota share contract
- A multi-year stop-loss reinsurance

The contract cash flows depend on each other (stop-loss depends on the residual risk of quota share), and both contracts serve a unified mortality management purpose. They can be grouped together.

g. Example – An insurer enters an overarching reinsurance treaty covering multiple annuity books in payment. However, each book:

- has its own pricing model
- has its own reinsurance commencement date
- can be separately negotiated or lapsed independently

Therefore, under IFRS 17, the overarching contract can be disaggregated into subgroups, each with its own initial recognition date, CSM, and contract boundary.

4. Challenges relating to loss-recovery components

a. Overview

i. Under IFRS 17, when a group of underlying insurance contracts is onerous at initial recognition, the entity must recognize an LC on the liability side and simultaneously recognize a gain from RCH via a loss-recovery component on the asset side.

- **Step 1:** establish LC for the onerous group and recognize a loss in P&L
- **Step 2:** establish a loss-recovery component on the asset side and recognize a gain on the P&L
- **Step 3:** decrease the CSM of the RCH by the amount of the loss-recovery component

ii. Over the lifetime of the contract group, the net P&L effect of the loss-recovery component will be zero, as the amortized offset mirrors the LC amortization.

b. Example

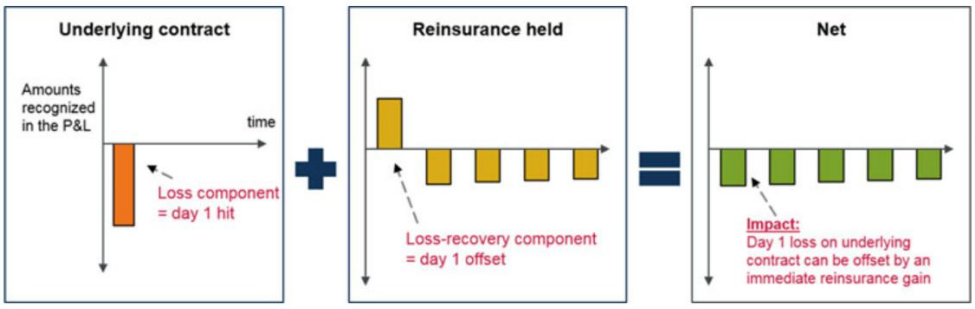

Figure 5. IFRS 17 treatment of reinsurance contracts held on initial recognition of onerous groups of underlying contracts.

From the diagram:

i. Left: Initial LC is recognized in P&L from the direct onerous contracts.

ii. Middle: Corresponding loss-recovery component created under RCH; amortized gradually.

iii. Right: Net effect – initial hit is muted, but subsequent profits are reduced.

Observations:

iv. **Tradeoff of reinsurance use:** Without reinsurance, a large LC hits upfront. With reinsurance, the loss is spread out, but subsequent profits are reduced. Reinsurance redistributes the timing of loss recognition.

v. **Potential distortion:** If the loss-recovery component exceeds the CSM of the RCH group, it can lead to net insurance service expense even when the RCH group is in net gain at inception.

vi. **Dual amortization:** If the loss-recovery component is less than the CSM, then both must be amortized together, complicating financial statement interpretation.

vii. **Timing constraint:** Losses from new onerous groups can only be offset by existing RCH contracts at the point of initial recognition. If the reinsurance is purchased after the loss, no such offset is permitted.

c. Challenges

i. Because IFRS 17 mandates that a loss-recovery component must be established at initial recognition of an LC, entities must be prepared to explain unintuitive results (e.g., potential distortion discussed above).

ii. IFRS 17 is silent on how to amortize the loss-recovery component. This leaves grey areas in practice and has led to the development of three methods (see Methods A, B and C below).

Example

Consider two onerous groups of contracts recognized more than one year apart and covered by the same reinsurance contract.

The reinsurance contract is a quota share contract with 50% business ceded. The discount rates and RA are both negligible.

The contract cash flows are shown as below:

Table 31. Example of Cash Flows for Two Underlying Contracts and a Reinsurance Contract held

Underlying contract 1						
Cash flows	20X1	20X2	20X3	20X4	20X5	Total
Premiums	1.0	1.0	1.0	1.0	1.0	5.0
Claims	−4.0	−6.0	−9.0	−13.0	−20.0	−52.0
Net cash flows	−3.0	−5.0	−8.0	−12.0	−19.0	−47.0
Underlying contract 2						
Cash flows	20X1	20X2	20X3	20X4	20X5	Total
Premiums		10.0	10.0	10.0	10.0	40.0
Claims		−1.0	−5.0	−15.0	−20.0	−41.0
Net cash flows		9.0	5.0	−5.0	−10.0	−1.0
Reinsurance contract held						
Cash flows	20X1	20X2	20X3	20X4	20X5	Total
Reinsurance claim recoveries	2.0	3.5	7.0	14.0	20.0	46.5

The FCF are $47 and $1 for contracts 1 and 2, producing a LC of $47 and $1. The reinsurance has a positive CSM of $46.5. The reversal of LC and loss-recovery components are then shown as below:

Table 32. Example of Profit and Loss Entries Based on Three Methods of Amortisation for the Loss-Recovery Component

P&L entries	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Loss component 1 – establishment	−47.00					−47.00
Loss component 1 – reversal	3.62	5.42	8.13	11.75	18.08	47.00
Loss component 2 – establishment		−1.00				−1.00
Loss component 2 – reversal		0.02	0.12	0.37	0.49	1.00
Loss-recovery component – establishment	23.50	0.50				24.00
Loss-recovery component reversal						
Method A	−3.62	−5.45	−8.26	−12.12	−18.56	−48.00
Method B	−1.81	−2.72	−4.13	−6.06	−9.28	−24.00
Method C	−1.81	−1.75	−3.49	−6.98	−9.97	−24.00

The quota share of the reinsurance is 50%. Therefore, it can only reinsure 50% of the LC, which is $23.5 and $0.5 for contracts 1 and 2. The loss-recovery components of $23.5 and $5 are then established for contracts 1 and 2.

This example provides three methods to amortize the loss-recovery component:

- Method A: The amount by which the loss-recovery component is amortized is a simple sum of the amounts by which the two underlying LC are being amortized.
- Method B: Adjust Method A by the quota share 50%.
- Method C: An entirely separate and bottom-up calculation like the methodologies used to amortize LC.

Comparing the three methods, following are their data of the balance of the loss-recovery component in each year under each method:

Table 33. Example of Loss-Recovery Component Balances Based on Three Methods of Amortisation

Loss-recovery component balances	Beginning of Year 1	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
“Simple sum”/Method A	23.5	20.4	14.9	6.7	−5.4	−24.0
“Scaled down approach”/Method B	23.5	22.2	19.5	15.3	9.3	0.0
“Bottom up Calculation”/Method C	23.5	22.2	20.4	17.0	10.0	0.0

Methods	Pros	Cons
A	Simple and straightforward	Does not reach zero unless fully reinsured Not realistic, not viable
B	Reaches zero, more realistic	Requires tracking the percentage recovery and tie back to underlying
C	Technically robust	Operationally complex, harder to implement

iii. Practical expediency vs. technical accuracy

Aspect	Practical expediency	Technical accuracy
Basis	LC is partially due to unrecoverable elements (e.g., RA, acquisition expenses)	Identify portion of LC directly tied to recoverable claims only
Result	Recognize loss-recovery component for the full LC, hiding unfavourable costs	Recognize loss-recovery component only for claims (not for RA or acquisition costs)
Impact	Prettier P&L but reduced transparency	More faithful representation, better internal analysis, but high system/judgment burden

Current IASB stance: Favours practical expediency, allowing gross LC and loss-recovery components even if not all elements are recoverable.

iv. Risk of reinsurer non-performance

- IFRS 17 does not require explicit allowance for non-performance risk when establishing a loss-recovery component is established.
- The entity assumes that reinsurer will not default.
- This is a deliberate and necessary concession of IFRS 17 to allow a smooth implementation loss-recovery component mechanism.
  - If non-performance risk were incorporated, the loss-recovery component would be impaired and contradict the purpose of offsetting LC in the P&L.

5. Sources of mismatches between direct business issued and RCH

a. This section outlines three sources of mismatches:

i. Estimating future new business

ii. Discount rate differences

iii. Reinsuring VFA business

b. Estimating future new business

i. IFRS 17 requires insurers to project future new business when measuring RCH. However, this does not apply to the underlying direct contracts. This asymmetry can introduce balance sheet mismatches and operational complexities.

ii. Example:

- A company enters a 100% quota share treaty on original terms.
- It estimates that two direct contracts will be written per month for the next quarter.
- In reality, only one contract is written per month.

Each underlying contract has a term of 10 month with expected premiums and claims as shown below:

Table 34. Example of Future new Business Expected Cash Flows

	Month										
Expected cash flows for each contract	1	2	3	4	5	6	7	8	9	10	*Total*
(a) Premiums	£60	£55	£50	£45	£40	£35	£30	£25	£20	£15	*£375*
(b) Claims	£5	£10	£15	£20	£25	£30	£35	£40	£45	£50	*£275*
(c) Net = a – b	£55	£45	£35	£25	£15	£5	–£5	–£15	–£25	–£35	£100

Assume RA and discounting are ignored.

Then, according to the table above, each underlying contract is expected to make the company $100 in total over its lifetime.

Initial recognition

- **Direct contract:** Only one contract is written at inception.
  - FCF = -$100, CSM = $100, LRC=$0
- **RCH:** Recognize estimated cash flows for the next quarter (which includes 6 contracts).
  - FCF = $600, CSM = -$600, LRC= $0

Balance sheet mismatch emerges as RCH reflects 6 contracts, while direct contracts only reflect one.

Subsequent measurement at the end the first month

- **Direct contract:** A new contract was written at the end of the first month
  - **First contract:** FCF improves from -$100 to -$45 (first month's cash flows have realized), CSM is amortized from $100 to $90 (string-line amortization over 10 months)
  - **Second contract:** FCF = -$100, CSM = $100
  - **Total:** FCF = -$145, CSM = $190, LRC = $45
- **RCH:**
  - FCF decreases from $600 to $445 ($100 decrease due to one less RCH than expected; $55 decrease due to realized first month's reinsurance cash flows)
  - CSM increases from -$600 to -$490 ($100 increase due to one less RCH than expected; $10 increase due to amortization from first underlying contract.)
  - **Total:** FCF = $445, CSM = -$490, LRC = -$45

Similarly, if we continue this calculation for all subsequent months, we have the following profiles of PVFCF, CSM and LRC:

Table 35. Example of PVFCF, CSM and LRC Calculations for Gross and Reinsurance Units of Account

		PVFCF		CSM		LRC	
Time point		Gross	Reins	Gross	Reins	Gross	Reins
Inception		£(100)	£600	£100	£(600)	£0	£0
End of month	1	£(145)	£445	£190	£(490)	£45	£(45)
	2	£(145)	£245	£270	£(370)	£125	£(125)
	3	£(10)	£10	£240	£(240)	£230	£(230)
	4	£95	£(95)	£210	£(210)	£305	£(305)
	5	£170	£(170)	£180	£(180)	£350	£(350)
	6	£215	£(215)	£150	£(150)	£365	£(365)
	7	£230	£(230)	£120	£(120)	£350	£(350)
	8	£215	£(215)	£90	£(90)	£305	£(305)
	9	£170	£(170)	£60	£(60)	£230	£(230)
	10	£95	£(95)	£30	£(30)	£125	£(125)
	11	£35	£(35)	£10	£(10)	£45	£(45)
	12	£0	£0	£0	£0	£0	£0

The graphs of the profiles of PVFCF, CSM and LRC are shown below

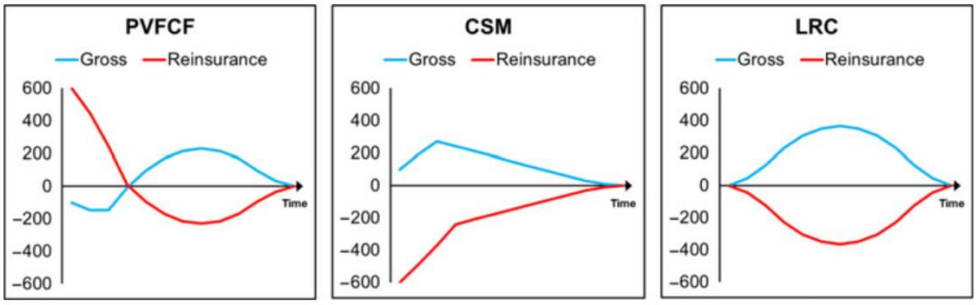

Figure 7. Example of PVFCF, CSM and LRC profiles for gross and reinsurance units of account.

There are mismatches in PVFCF and CSM.

There is no mismatch in LRC, as the direct contract and RCH perfectly mirror with each other.

Now we can reproduce the example, but this time assume that RCH is measured only when corresponding direct contracts are recognized.

Table 36. Example of PVFCF, CSM and LRC Calculations for Gross and Reinsurance Units of Account Assuming Future New Business will only be Recognised as and when it is Recognised for the Gross Unit of Account

		PVFCF		CSM		LRC	
Time point		Gross	Reins	Gross	Reins	Gross	Reins
Inception		£(100)	£100	£100	–100	£0	£0
End of month	1	£(145)	£145	£190	£(190)	£45	£(45)
	2	£(145)	£145	£270	£(270)	£125	£(125)
	3	£(10)	£10	£240	£(240)	£230	£(230)
	4	£95	£(95)	£210	£(210)	£305	£(305)
	5	£170	£(170)	£180	£(180)	£350	£(350)
	6	£215	£(215)	£150	£(150)	£365	£(365)
	7	£230	£(230)	£120	£(120)	£350	£(350)
	8	£215	£(215)	£90	£(90)	£305	£(305)
	9	£170	£(170)	£60	£(60)	£230	£(230)
	10	£95	£(95)	£30	£(30)	£125	£(125)
	11	£35	£(35)	£10	£(10)	£45	£(45)
	12	£0	£0	£0	£0	£0	£0

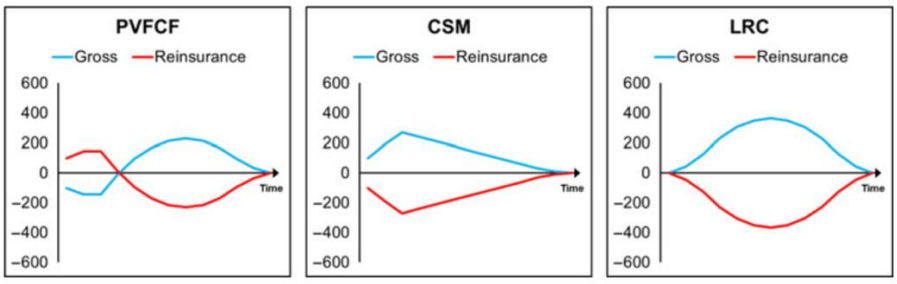

Figure 8. Example of PVFCF, CSM and LRC profiles for gross and reinsurance units of account assuming future new business will only be recognised as and when it is recognised for the gross unit of account.

Under this approach, the PVFCF, CSM and LRC balances all perfectly mirror with each other.

In practice, entities may form their own opinions and discuss with auditors about best approach possible going forward.

b. Discount rate differences

i. IFRS 17 requires two separate sets of discount rates under GMM:

- FCF and RA are discounted at current discount rates for the balance sheet.
- FCF and RA also need to be discounted using the locked-in rates for calculating CSM at the initial recognition and subsequent measurements.

ii. If RCH and direct contracts are recognized at different times, they will have different locked-in rates, leading to CSM amortization mismatches in the P&L.

iii. Example:

- RCH entered in 2018.
- RCH covers direct contract groups written in 2018, 2019 and 2020
- Each direct contract group valued using locked-in rates in 2018, 2019 and 2020, respectively.

The mismatch will occur in, say 2019, where the CSM of RCH is amortized with locked-in rate in 2018 whereas the CSM for the direct contract group written in 2019 is amortized with locked-in rate in 2019. The CSM movements do not align, causing P&L mismatch.

iv. Mitigating strategies:

- If RCH is open to new business and the contract boundary is rolling forward according to the notice period (see Section III.G.2.b for details), then the mismatch is minor, as the locked-in rates keep being updated.
- If RCH is designed to cover closed blocks of in-force business, then consider applying a "top-down" discount rate consistently across all products.

c. Reinsuring VFA business

i. No VFA is applicable for RCH. Therefore, for direct contracts measured under VFA, their corresponding RCH must be measured under GMM.

ii. Under VFA, financial risk (interest rate change) adjusts CSM. Under GMM, it adjusts the P&L via insurance finance expense. Mismatch will then occur.

iii. To cope with this, the entity can choose to use the risk mitigation option, which deliberately moves certain amounts from CSM to P&L.

iv. Risk mitigation option can only eliminate the mismatch arising from financial risk.

- Non-financial risk (e.g., mortality) may still result in P&L mismatches due to difference in locked-in rates discussed earlier.

SECTION PEQ

Practice Exam Questions

Introductory Note

This section of the study manual contains an array of review questions covering the entire syllabus. These questions were written to serve as an aid in assessing your understanding of the material after you have completely covered it through your studies. It is unlikely that you would see questions of this type on the actual exam, since those questions are developed with an eye toward application of multiple parts of the syllabus in actual job situations.

While these questions were not developed as possible exam questions by themselves, it is entirely possible that you could see some of these questions as parts of actual exam questions.

START OF EXAM

50 Points -- 6 Questions

Question 1 (10 points)

Discuss the LICAT calculation and each element of the Total Ratio and the Core Ratio.

GO TO NEXT PAGE

Question 2 (5 points)

With respect to the article on a Multi-Stakeholder Approach to Capital Adequacy,

a) describe the weaknesses of Economic Capital Models.

b) Describe the benefits of the Financial Rating Risk Replication Technique

GO TO NEXT PAGE

Question 3 (9 points)

With respect to Embedded Value (EV),

c) Discuss the mechanics of embedded value. Show and describe all formulas

d) Describe the specific disclosure items included within the core EV paper, EEV Principles.

e) List additional items generally disclosed by companies.

GO TO NEXT PAGE

Question 4 (8 points)

a) With respect to persistency and lapse risk in financial condition testing, discuss

- Nature of the risk
- Causes of adverse experience
- Adverse ripple effects
- Possible management actions

b) With respect to market and credit risk in financial condition testing, discuss

- Causes of adverse experience
- Mismatches between asset and liability cash flows

GO TO NEXT PAGE

Question 5 (10 points)

With respect to rating agencies, discuss the core rating factors every rating agency considers when rating a life insurance company.

Question 6 (8 points)

Discuss the options available to an insurer to deal with unprofitable business and describe the advantages and disadvantages of each option.

END OF EXAMINATION

STOP

SECTION PES

Solutions to Practice Exam Solutions

Question 1 Solution

Source: **ILA201-604-25, OSFI Guideline: Life Insurance Capital Adequacy Test (LICAT)**

LICAT ratios

The Total Ratio focuses on policyholder and creditor protection

(Available Capital + Surplus Allowance + Eligible Deposits) / Base Solvency Buffer

The Core Ratio focuses on financial strength

(Tier 1 Capital + 70% Surplus Allowance + 70% Eligible Deposits) / Base Solvency Buffer

Available Capital is Tier 1 and Tier 2 capital with deductions, limits and restrictions, and includes Available Capital in consolidated subsidiaries

Risk adjustments and surplus allowance

Risk adjustment is the adjustment for non-financial risks reported in the financial statements associated with the block of business

This includes credit risk and counterparty default

The surplus adjustment is the net risk adjustment (net of reinsurance) reported in financial statements for all insurance contracts

Eligible deposits—collateral and letters of credit placed by unregistered reinsurers may be recognized, subject to the criteria for risk transfer

Base Solvency Buffer

Capital requirements are set at a target level so that it aligns with a conditional tail expectation of 99% over a one-year time horizon with a terminal provision

The Base Solvency Buffer is the sum of the aggregate capital requirements net of credits for six geographic regions, calculated using all assets, written insurance business, and liabilities

The six regions are Canada, U.S., UK, Europe other than UK, Japan, and other

The aggregate capital requirement within a geographic region includes these risks

Credit risk
Market risk
Insurance risk
Segregated funds guarantee risk
Operational risk

Geographic regions vary by the risk component