FA Module 22: IFRS 17 subsequent measurement – basic exercises

(The attached PDF file has better formatting.)

The final exam does not test onerous contracts, so you can skip most of this reading without affecting your exam performance.

The basic exercises show the accounting entries for

- non-onerous contracts
- onerous contracts
- non-onerous contracts that later become onerous
- onerous contracts that later become not onerous

In practice, premiums are received and claims occur throughout the year. The exercises here have premiums received at initial recognition and claims that occur at the end of the year to simplify the discounting and the accounting entries. The probability distribution of claims by time and amount complicates the arithmetic and obscures the intuition. The fulfilment cash flows in real scenarios are the present values of all cash flows.

Some exercises have one claim at the end of the second or third year; other exercises have claims each year.

These exercises cover material in Modules 21 (initial recognition), 22 (subsequent measurement), and 24 (reconciliation exhibits).

IFRS 17 requires two reconciliations of the insurance contract liability for each group of insurance contracts. The IFRS 17 *Illustrative Examples* refers to them as

- the reconciliation of the insurance contract liability
- the reconciliation of the financial statements (the statement of financial position with the statement of profit or loss)

Review these practice problems for both module 22 and module 24.

- For module 22, focus on computing fulfilment cash flows, the contractual service margin, the insurance finance expense, and the insurance contract liability.
- For module 24, focus on insurance revenue, insurance service expense, and the reconciliation exhibits.

Exercise 22.1: General measurement approach – contracts are not onerous

On January 1, 20X1, an insurer issues a group of insurance contracts with three year contract periods:

- it collects premium of 800 at initial recognition
- it expects one claim for 750 to occur and be paid on December 31, 20X3
- the discount rate for the fulfilment cash flows is 6% *per annum*
- the risk adjustment for non-financial risk is 40 and does not accrete interest
- acquisition cash flows are zero
- the insurer invests the premium in financial assets yielding 8% *per annum*

A. What are the fulfilment cash flows at initial recognition?
B. What is the contractual service margin at initial recognition?
C. What is the insurance contract liability at initial recognition?
D. What are the fulfilment cash flows right after the premium is received?
E. What are the fulfilment cash flows at December 31, 20X1?
F. What is the insurance finance expense on the fulfilment cash flows in 20X1?
G. What is the contractual service margin at December 31, 20X1, before the allocation to profit or loss?
H. What is the allocation to profit or loss at December 31, 20X1?
I. What is the contractual service margin at December 31, 20X1, after the allocation to profit or loss?
J. What is the insurance contract liability at December 31, 20X1?
K. What are the entries for the reconciliation of the insurance contract liability in 20X1?
L. What are the entries for the reconciliation of the financial statements in 20X1?
M. What is the insurance finance expense on fulfilment cash flows and contractual service margin in 20X2?
N. What is the contractual service margin at year-end 20X2, before and after the allocation to profit or loss?
O. What are the entries for the reconciliation of the insurance contract liability in 20X2?
P. What are the entries for the reconciliation of the financial statements in 20X2?
Q. What is the insurance finance expense on fulfilment cash flows and contractual service margin in 20X3?
R. What is the contractual service margin at year-end 20X3, before and after the allocation to profit or loss?
S. What are the entries for the reconciliation of the insurance contract liability in 20X3?
T. What are the entries for the reconciliation of the financial statements in 20X3?

Part A: The fulfilment cash flows is the present value of the net future cash outflows + the risk adjustment for non-financial risk. At initial recognition:

- future premium cash inflows = 800, discounted for 0 years
- future claim cash outflows = 750, discounted for 3 years
- risk adjustment for non-financial risk = 40, not discounted

The fulfilment cash flows = $-800 / 1.06^0 + 750 / 1.06^3 + 40 = (130.29)$.

The fulfilment cash flows = the present value of the cash needed to fulfill the insurance obligations, so

- claim payments, acquisition expenses, and the risk adjustment are positive entries
- premium collected is a negative entry

Finance textbooks discuss the net present value at the cost of capital, where cash inflows are positive and cash outflows are negative. The fulfilment cash flows differ several ways:

- The cash inflows are negative entries and the cash outflows are positive entries.
  - Signs are accounting conventions, not real items.
  - We use the sign convention in the IFRS 17 *Illustrative Examples*. The IFRS 17 *Effects Analysis* uses the sign convention in finance textbooks. The text of IFRS 17 does not specify a sign convention.
- The discount rate is a risk-free rate, which is usually less than the cost of capital.

- Acquisition cash flows that are directly attributable to the portfolio of insurance contracts are included in the fulfilment cash flows. Other acquisition costs are written off as expenses when they occur and are not included in the IFRS 17 calculations or reconciliation exhibits.
- The fulfilment cash flows include a separate risk adjustment for non-financial risk.
  - The opportunity cost of capital used in finance textbooks includes risk adjustments for both financial risk and non-financial risk.
  - For IFRS 17, the risk adjustment for financial risk affects the discount rate (as in finance textbooks) and the risk adjustment for non-financial risk is shown separately.

Premiums are generally collected before claims occur. A lower discount rate, such as a risk-free rate instead of the cost of capital, makes the fulfilment cash flows more positive: negative cash inflows for premiums are not discounted as much as positive cash outflows for claims.

Illustration: Premium of 100 is received at time t=0 and a claim of 110 is paid at time t=1.

- If the discount rate is 10% *per annum*, the fulfilment cash flows = 110 / 1.10 – 100 = 0.
- If the discount rate is 6% *per annum*, the fulfilment cash flows = 110 / 1.06 – 100 = 3.77.

Including only the acquisition cash flows that are directly attributable to the insurance contracts reduces the fulfilment cash flows. Directly attributable acquisition cash flows need not vary with the number of insurance contracts or with the premium; they are measured on a portfolio basis, not a contract basis or a group basis.

- Some fixed costs allocated to the portfolio of insurance contracts, such as rent expense for a branch office, are directly attributable to the portfolio and are included in the fulfilment cash flows.
- Some fixed costs are not related to acquiring policies or can not be attributed to a specific portfolio of insurance contracts and are not part of fulfilment cash flows.

Later exercises include acquisition cash flows, showing the effects on fulfilment cash flows, the contractual service margin, insurance revenue, and insurance service expense.

The risk adjustment for non-financial risk compensates the insurer for the uncertainty in the claim payments.

The cost of capital method for the fair value risk margin (used in Solvency II and the Swiss Solvency Test as the fair value risk margin for technical reserves) is the cost of capital minus the risk-free rate. Using the cost of capital method for the IFRS 17 risk adjustment for non-financial risk uses the cost of capital as the discount rate.

The sign convention here for cash inflows and outflows is the same as in the IFRS 17 *Illustrative Examples*. This convention is not required by IFRS 17, but it helps you compare the exhibits here with those used to meet IFRS requirements. The signs of assets, liabilities, revenue, and expenses in these *Illustrative Examples* are natural for some and confusing to others, so we often comment on the signs of the accounting entries.

The discount rate here is the same for all years. Changes in discount rates affect the fulfilment cash flows and insurance finance expense, but not the contractual service margin. For each portfolio of insurance contracts, the insurer selects whether changes in the discount rate affect profit or loss or affect other comprehensive income. Separate exercises show the effects of changes in the discount rate.

Part B: The contractual service margin (CSM) at initial recognition is the negative of the fulfilment cash flows but not less than zero = 130.29. The contractual service margin is the expected profit from the insurance contracts. It is recognized (moved to profit or loss) as the insurance services are provided.

The IFRS 17 contractual service margin is like a deferred revenue or the net unearned premium reserve (net of deferred policy acquisition costs), but the computations differ. The contractual service margin eliminates any profit at initial recognition, just as the unearned premium reserve does, but the recognition of this profit depends on changes in the fulfilment cash flows. The IFRS 17 equivalent of the unearned premium reserve is the premium allocation approach, discussed in separate exercises.

Both GAAP and IFRS use two principles for the recognition of profit:

- Losses may not be deferred. If the insurer expects negative profits on a group of insurance contracts, the loss is recognized immediately in profit or loss.
- Gains may not be anticipated. If the insurer expects positive profits on a group of insurance contracts, the gain is recognized in profit or loss as the insurance services are provided.

Part C: The insurance contract liability is the fulfilment cash flows + the contractual service margin.

- If the insurance contracts are not onerous (as in this exercise), the contractual service margin at initial recognition is the negative of the fulfilment cash flows and the insurance contract liability is zero.
- If the insurance contracts are onerous ("loss-making"), the fulfilment cash flows at initial recognition are positive, the contractual service margin is zero, the insurance contract liability is positive, and the insurer records a loss in the statement of profit or loss.

One is tempted to think of non-onerous contracts as profitable and onerous contracts and unprofitable. The profitability of a set of contracts is the net present value at the opportunity cost of capital including all related expenses but not the risk adjustment for non-financial risk (which affects the cost of capital). IFRS 17 uses the term loss-making, meaning that the group of contracts causes a loss in the statement of profit or loss.

The insurance contracts in this exercise are not onerous, so the insurance contract liability at initial recognition is zero. Separate exercises show scenarios for onerous contracts.

Part D: The fulfilment cash flows right after the premium is received = $750 / 1.06^3 + 40 = 669.71$. The premium is often received when the coverage period begins, so we speak of the moment after the premium is received as "right after initial recognition." The receipt of premium (a cash inflow) increases the fulfilment cash flows and the insurance contract liability:

- fulfilment cash flows: -130.29 + 800 = 669.71
- insurance contract liability: 0 + 800 = 800.00

The contractual service margin is determined at initial recognition. It does not change when the premium is received or a claim is paid, though it does change if the expected future premiums or claims change. It moves to profit or loss ratably over the contract period (in proportion to the coverage units each year).

Part E: The fulfilment cash flows at December 31, 20X1, are $750 / 1.06^2 + 40 = 707.50$.

The change in the fulfilment cash flows during the year stemming from the time value of money is insurance finance expense. The insurer's liability to its policyholders increases from 669.71 to 707.50, so it has an expense of 707.50 – 669.71 = 37.79. The increase in the liability is a credit, so the firm shows an offsetting expense (a debit) on the statement of profit or loss. [fn: Similarly, if a firm pays interest on its debt of 100, it incurs interest expense of 100 (a debit) on the statement of profit or loss and its cash asset reduces by 100; the reduction of the asset is the offsetting credit.]

Question: The insurer earns 8% *per annum* on the financial assets backing the its liabilities (the reserves). Where is this investment income shown?

Answer: IFRS 17 deals with the accounting for the insurance contracts, not for the investment income on the assets bought with the contract premium. The insurer's financial statements show investment income as well as insurance finance expense.

- IFRS 17 seeks to avoid accounting mismatches between the investment income and the insurance finance expense by having them flow through the same financial statement – either profit or loss or other comprehensive income, depending on the classification of the assets.
  - Other exercises show this dis-aggregation of insurance finance expense between profit or loss and other comprehensive income.

- IFRS 17 presents the profit or loss from the insurance contracts in two parts:
  - insurance service result, which is insurance revenue minus insurance service expense
  - insurance finance income or expense
- The IFRS 17 *Effects Analysis* shows a net financial result in the statement of comprehensive income as
  - investment income on the financial assets from the insurance contracts
  - minus the insurance finance expense

If the credited rate on policyholder account balances depends on the returns on specified pools of assets, IFRS 17 uses a different measurement approach, the variable fee approach, discussed in separate exercises.

The fulfilment cash flows at initial recognition has two parts:

- the present value of future cash flows, or $750 / 1.06^3 = 629.71$, which accretes interest
- the risk adjustment for non-financial risk of 40, which does not accrete interest (in this exercise)

If the discount rate, the claim estimates, and the risk adjustment for non-financial risk do not change, we can derive the fulfilment cash flows at December 31, 20X1, as

	the present value of the future cash flows at initial recognition × (1 + the discount rate)
+	the risk adjustment for non-financial risk
=	629.71 × (1 + 6%) + 40 = 707.49

The fulfilment cash flows use the current market discount rate, not the discount rate at initial recognition. If the discount rate changes between initial recognition and the subsequent valuation date, the fulfilment cash flows are re-estimated at the revised discount rate. If the term structure of interest rates is not flat, the discount rates depend on the maturity of the claim, so the discount rates for the fulfilment cash flows change even if the market interest rates do not change.

For groups of insurance contracts with many expected claims, changes in claim estimates occur frequently. We compute the insurance contract liability each year using the discount rates for each claim's maturity. The change in the fulfilment cash flows is separated between the time value of money (the changes in the discount rates) and insurance service expense (the changes in the claim estimates).

Part F: The insurance finance expense on the fulfilment cash flows is

$$(750 / 1.06^2 + 40) – (750 / 1.06^3 + 40) = 37.78$$

The discount rate did not change here, so we can also compute this as $6\% \times 750 / 1.06^3 = 37.78$

If the current discount rate had changed from 6% to 5%, the insurance finance expense would be

$$(750 / 1.05^2 + 40) – (750 / 1.06^3 + 40) = 50.56$$

If the current discount rate had changed from 6% to 7%, the insurance finance expense would be

$$(750 / 1.07^2 + 40) – (750 / 1.06^3 + 40) = 25.36$$

The insurer makes an accounting policy choice whether to recognize

- the entire insurance finance expense in profit or loss
- a systematic allocation in profit or loss and the rest in other comprehensive income

The systematic allocation recognizes 37.78 in profit or loss for 20X1. The other comprehensive income is

- 50.56 – 37.78 = 12.78 if the market interest rate changes from 6% to 5%.
- 25.36 – 37.78 = (12.42) if the market interest rate changes from 6% to 7%.

In 20X2 and 20X3, the amount recognized in profit or loss for the systematic allocation continues to use the discount rate at initial recognition (the 6% discount rate here), and the other comprehensive income is positive or negative, depending on the current market rate. The total other comprehensive income is zero when the claim is paid. The systematic allocation is explained in another exercise. Most insurers recognize all insurance finance expense in profit or loss or use a constant yield for profit or loss, but other methods are permitted.

Part G: The contractual service margin is the unearned profit in the insurance contracts at initial recognition. We use present values for the premium, claim, and acquisition cash flows, so we accrete interest on the contractual service margin as well. The accretion of interest is 6% × 130.29 = 7.82, and the contractual service margin at December 31, 20X1, before the allocation to profit or loss, is 130.29 × 1.06 = 138.11.

We compute the contractual service margin by accreting interest, not by computing present values of future cash flows, so we use the discount rate at initial recognition, not the current market rate. If the discount rate in this exercise changes to 5% or 7% at December 31, 20X1, we accrete interest on the contractual service margin at 6%, not at 5% or 7%, though we use 5% or 7% for the fulfilment cash flows.

Illustration: A one-year insurance contract has premium of 100 received on January 1, a claim that occurs and is paid for 90 on December 31, no risk adjustment for non-financial risk, and a discount rate of 6% *per annum*. The present value of the profit in the contract is

- 100 – 90 / 1.06 = 15.09 on January 1
- 100 × 1.06 – 90 = 16.00 on December 31

This profit (the contractual service margin) accretes interest at 6% *per annum*: 15.09 × 1.06 = 16.00

Illustration: A two-year insurance contract has

- premium of 100 received on January 1, 20X1
- a claim that occurs and is paid for 90 on December 31, 20X2
- no risk adjustment for non-financial risk
- a discount rate of 6% *per annum*.

The contractual service margin at initial recognition is $100 – 90 / 1.06^2 = 19.90$. The fulfilment cash flows right after the premium is received are $90 / 1.06^2 = 80.10$.

At December 31, 20X1, the current discount rate has changed to 5% *per annum*. The fulfilment cash flows are now $90 / 1.05^1 = 85.71$.

- The insurance finance expense on the present value of future cash flows is 85.71 – 80.10 = 5.61.
  - This is not 6% × 80.10 = 4.81 or 5% × 80.10 = 4.01.
- The insurance finance expense on the contractual service margin is 6% × 19.90 = 1.19.
  - The contractual service margin after accretion of interest is 19.90 + 1.19 = 21.09.

Part H: The profit in the insurance contract is recognized in profit or loss as coverage is provided.

- For a single general insurance policy, coverage is usually provided evenly over the policy term.
- For groups of policies, coverage is rarely even: some policies are added and some policies lapse.
- For groups of life insurance contracts, a death decreases the number of policies (in addition to lapses).

This exercise assumes no contracts lapse or are added during the three year coverage period, so one third of the profit is recognized in 20X1 and two thirds remain in the contractual service margin. The profit in the 20X1 statement of profit or loss is 138.11 / 3 = 46.04.

This exercise has no claims in 20X1, so the insurance revenue in 20X1 is the allocation of profit of 46.04.

- If claims occur in 20X1, the claim is both insurance revenue (the recognition of the premium received for the claim) and insurance service expense (the incurral of the claim).
- If part of the risk adjustment for non-financial risk is released in 20X1, the amount released is insurance revenue, since the insurer is compensated for the risk adjustment in the premium, but not insurance service expense, since no money is paid when the risk adjustment is released.
- If the insurance contract has directly attributable acquisition cash flows, the portion of these cash flows allocated to 20X1 is insurance revenue (recognition of the premium that is allocated to these cash flows) and insurance service expense (the acquisition cash flows allocated to 20X1).

We add these three elements in subsequent exercises to insurance revenue and insurance service expense.

Part I: The contractual service margin after the allocation to profit or loss is

$$138.11 - 46.04 = 92.07 \text{ or } 138.11 \times 2 / 3 = 92.07.$$

Part J: The insurance contract liability at December 31, 20X1, is the fulfilment cash flows + the contractual service margin = 707.50 + 92.07 = 799.57.

Part K: The insurer must reconcile the entries at the beginning and the end of the year for

- the present value of future cash outflows
- the risk adjustment for non-financial risk
- the contractual service margin

Each reconciliation shows the

- changes related to future service
- changes related to current service
- insurance finance income or expense

For this exercise, the insurance finance expense is

- present value of future cash flows: 37.78
- contractual service margin: 7.82
- risk adjustment for non-financial risk: 0

The changes related to future service are

- present value of future cash flows (new contracts) = $-800 / 1.06^0 + 750 / 1.06^3 = (170.29)$
- risk adjustment for non-financial risk = 40
- contractual service margin = 130.29

The changes related to current service are

- present value of future cash flows (no new contracts or changes in estimates in 20X1) = 0
- risk adjustment for non-financial risk (no release of risk adjustment in 20X1) = 0
- contractual service margin = –46.04 (allocated to profit or loss in 20X1)

The reconciliation exhibits are shown below for the group of insurance contracts.

Reconciliation of the insurance contract liability: source of changes in the fulfilment cash flows (20X1)

	Present Value of Future Cash Flows	*Risk Adjustment For Non-financial Risk*	*Contractual Service Margin*	*Insurance Contract Liability*
Opening Balance	–	–	–	–
Changes for Future Service	(170.29)	40.00	130.29	0.00
Cash Inflows	800.00			800.00
Insurance Finance Expenses	37.78	0.00	7.82	45.60
Changes for Current Service	0.00	0.00	(46.04)	(46.04)
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	667.49	40.00	92.07	799.56

Part L: The insurer must reconcile

- the liability for remaining coverage, excluding the loss component
- the loss component of the liability for remaining coverage
- the liability for incurred claims

at the beginning and end of the year, showing

- insurance revenue
- insurance service expense
- insurance finance income or expense
- cash inflows and outflows

No claims have yet occurred in this exercise, so the liability for incurred claims is zero. The loss component of the liability for remaining coverage refers to onerous contracts; these contracts are not onerous. For the liability for remaining coverage in this exercise:

- insurance revenue = -46.04 (the allocation of the contractual service margin to 20X1)
  - revenue decreases the liability, so the entry is negative
- insurance service expense = 0 (no claims or directly attributable acquisition cash flows are incurred)
- insurance finance income or expense = 37.78 + 7.82 = 45.60
  - the expense increases the liability, so the entry is positive
- cash inflows = premium of 800
  - cash inflows that are unearned increase the liability, so the entry is positive

The liability for remaining coverage at the end of the year is 800 – 46.04 + 45.60 = 799.56

- The allocation of the contractual service margin is recognized as profit in the statement of profit or loss as part of the insurance service result.
- The insurance finance expense increases the insurance contract liability and is recognized in profit or loss as part of the insurance finance result, where it is offset by investment income on the assets.

On its statement of comprehensive income, the insurer shows net financial result as investment income minus the insurance finance expense. The net financial result is not explained in the text of IFRS 17, but it is shown in the IFRS 17 *Effects Analysis* exhibits.

Reconciliation of the financial statements (20X1)

	Liability for remaining coverage excluding loss component	*Liability for remaining coverage: loss component*	*Liability for incurred claims*	*Insurance Contract Liability*
Opening Balance	–	–	–	–
Cash Inflows	800.00	0.00	0.00	800.00
Insurance revenue	(46.04)	0.00	0.00	(46.04)
Insurance service expenses	0.00	0.00	0.00	0.00
Investment component	0.00	0.00	0.00	0.00
Insurance Finance Expenses	45.60	0.00	0.00	45.60
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	799.56	0.00	0.00	799.56

Part M: The insurance finance expense on the fulfilment cash flows for 20X2 is

$$(750 / 1.06^1 + 40) – (750 / 1.06^2 + 40) = 40.05$$

The discount rate did not change here, so we can also compute this as $6\% \times 750 / 1.06^2 = 40.05$

The insurance finance expense on the contractual service margin for 20X2 is $6\% \times 92.07 = 5.52$

The total insurance finance expense is $40.05 + 5.52 = 45.57$

Part N: The contractual service margin at December 31, 20X2, before the allocation to profit or loss is

$$92.07 + 5.52 = 97.59$$

The coverage units are the same for 20X2 and 20X3 (the only years remaining), so the contractual service margin allocated to profit or loss in 20X2 is $97.59 / 2 = 48.80$.

The contractual service margin at December 31, 20X2, after the allocation to profit or loss is

$$97.59 – 48.80 = 48.79.$$

(With more decimal places, both the allocation to profit or loss and the remaining contractual service margin are 48.79628.)

Part O: The reconciliation of the insurance contract liability for 20X2 is

Reconciliation of the insurance contract liability: source of changes in the fulfilment cash flows (20X2)

	Present Value of Future Cash Flows	*Risk Adjustment For Non-financial Risk*	*Contractual Service Margin*	*Insurance Contract Liability*
Opening Balance	667.49	40.00	92.07	799.56
Changes for Future Service	0.00	0.00	0.00	0.00
Cash Inflows	0.00			0.00
Insurance Finance Expenses	40.05	0.00	5.52	45.57

Changes for Current Service	0.00	0.00	(48.80)	(48.80)
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	707.54	40.00	48.79	796.33

Part P: The reconciliation of the financial statements for 20X2 is

Reconciliation of the financial statements (20X2)

	Liability for remaining coverage excluding loss component	*Liability for remaining coverage: loss component*	*Liability for incurred claims*	*Insurance Contract Liability*
Opening Balance	799.56	0.00	0.00	799.56
Cash Inflows	0.00	0.00	0.00	0.00
Insurance revenue	(48.80)	0.00	0.00	(48.80)
Insurance service expenses	0.00	0.00	0.00	0.00
Investment component	0.00	0.00	0.00	0.00
Insurance Finance Expenses	45.57	0.00	0.00	45.57
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	796.33	0.00	0.00	796.33

Part Q: The insurance finance expense on the fulfilment cash flows for 20X3 is

$$(750 / 1.06^0 + 40) - (750 / 1.06^1 + 40) = 42.45$$

The discount rate did not change here, so we can also compute this as $6\% \times 750 / 1.06^1 = 42.45$

The insurance finance expense on the contractual service margin for 20X3 is $6\% \times 48.79 = 2.93$

The total insurance finance expense is $42.45 + 2.93 = 45.38$.

Part R: The contractual service margin at December 31, 20X3, before the allocation to profit or loss is

$$48.79 + 2.93 = 51.72$$

20X3 is the last year of coverage, so the entire contractual service margin is allocated to profit or loss in 20X3.

The contractual service margin at December 31, 20X3, after the allocation to profit or loss is zero.

Part S: The claim for 750 is paid in 20X3, and the risk adjustment for non-financial risk is released.

- The cash outflow of the claim payment reduces the present value of future cash flows by 750.
- The release of the risk adjustment (not a cash flow) is a change for current service.

The reconciliation of the insurance contract liability for 20X3 is shown below.

Reconciliation of the insurance contract liability: source of changes in the fulfilment cash flows (20X3)

	Present Value of Future Cash Flows	*Risk Adjustment For Non-financial Risk*	*Contractual Service Margin*	*Insurance Contract Liability*
Opening Balance	707.54	40.00	48.79	796.33
Changes for Future Service	0.00	0.00	0.00	0.00
Cash Inflows	0.00	0.00	0.00	0.00
Insurance Finance Expenses	42.45	0.00	2.93	45.38
Changes for Current Service	0.00	(40.00)	(51.72)	(91.72)
Cash Outflows	(750.00)	0.00	0.00	(750.00)
Closing Balance	(0.01)	0.00	0.00	(0.01)

Part T: The *incurral* of the 20X3 claim affects three entries on the reconciliation of the financial statements:

- the premium received for the claim is recognized as insurance revenue
  - reducing the liability for remaining coverage
- the premium received for the risk adjustment for non-financial risk is recognized as insurance revenue
  - reducing the liability for remaining coverage
- the *occurrence* of the claim is an insurance service expense
  - increasing the liability for incurred claims
- the *payment* of the claim is a cash outflow
  - reducing the liability for incurred claims.

The insurance revenue for 20X3 is

  750: the premium received for the 20X3 loss
+ 40: the premium received for the 20X3 release of the risk adjustment for non-financial risk
+ 51.72: the allocation of the contractual service margin to profit or loss
= 750 + 40 + 51.72 = 841.72

Revenue is a negative entry in the reconciliation exhibits since it reduces the insurance contract liability.

The total insurance finance expense is 42.45 + 2.93 = 45.38.

The reconciliation of the financial statements for 20X3 is

Reconciliation of the financial statements (20X3)

	Liability for remaining coverage excluding loss component	*Liability for remaining coverage: loss component*	*Liability for incurred claims*	*Insurance Contract Liability*
Opening Balance	796.33	0.00	0.00	796.33
Cash Inflows	0.00	0.00	0.00	0.00
Insurance revenue	(841.72)	0.00	0.00	(841.72)
Insurance service expenses	0.00	0.00	750.00	750.00
Investment component	0.00	0.00	0.00	0.00
Insurance Finance Expenses	45.38	0.00	0.00	45.38
Cash Outflows	0.00	0.00	(750.00)	(750.00)
Closing Balance	(0.01)	0.00	0.00	(0.01)

Summary of the reconciliation exhibits

This exercise shows the reconciliation exhibits for three years, with derivation of the figures.

All years show

- insurance finance expense (stemming from the time value of money)
  - separately for the present value of future cash flows and the contractual service margin
- changes related to current service (the allocation of the contractual service margin to profit or loss)
  - for the source of changes in the fulfilment cash flows
- insurance revenue (the allocation of the contractual service margin to profit or loss)
  - for the reconciliation of the financial statements

The first year shows also

- changes related to future service (new insurance contracts)
  - separately for the present value of future cash flows and the risk adjustment for non-financial risk
- cash inflows (the premium)

The third year shows also

- insurance revenue (the recognition of the premium for the incurred claim)
- changes related to current service (incurral of claim; release of risk adjustment for non-financial risk)
- cash outflows (the claim payment)

Exercise 22.2: General measurement approach for onerous contracts

On January 1, 20X1, an insurer issues a group of insurance contracts with three year contract periods and

- it collects premium of 450
- it expects one claim for 750 to occur and be paid on December 31, 20X3
- the discount rate for the fulfilment cash flows is 6% *per annum*
- the risk adjustment for non-financial risk is 40 and does not accrete interest
- acquisition cash flows are zero
- the insurer invests the premium in financial assets yielding 8% *per annum*

A. What are the fulfilment cash flows at initial recognition?
B. What is the contractual service margin at initial recognition?
C. What is the profit or loss at initial recognition?
D. What is the insurance contract liability at initial recognition?
E. What are the fulfilment cash flows right after the premium is received?
F. What are the fulfilment cash flows at December 31, 20X1?
G. What is the insurance finance expense on the present value of future cash flows in 20X1?
H. What is the insurance contract liability at December 31, 20X1?
I. What is the allocation to profit or loss at December 31, 20X1?
J. What is the insurance contract liability at December 31, 20X1?
K. What are the entries for the 20X1 reconciliation of the insurance contract liability?
L. How is the 20X1 insurance finance expense allocated for the reconciliation of the financial statements?
M. What are the entries for the 20X1 reconciliation of the financial statements?
N. What is the insurance finance expense on the present value of future cash flows in 20X2?
O. What are the entries for the 20X2 reconciliation of the insurance contract liability?
P. How is the 20X2 insurance finance expense allocated for the reconciliation of the financial statements?
Q. What are the entries for the 20X2 reconciliation of the financial statements?
R. What is the insurance finance expense on the present value of future cash flows in 20X3?
S. What are the entries for the 20X3 reconciliation of the insurance contract liability?
T. How is the 20X3 insurance finance expense allocated for the reconciliation of the financial statements?
U. What are the entries for the 20X3 reconciliation of the financial statements?

Part A: The fulfilment cash flows are the present value of the net future cash outflows + the risk adjustment for non-financial risk. At initial recognition:

- future premium cash inflows = 450, discounted for 0 years
- future claim cash outflows = 750, discounted for 3 years
- risk adjustment for non-financial risk = 40, not discounted

The fulfilment cash flows = $-450 / 1.06^0 + 750 / 1.06^3 + 40 = 219.71$

Part B: The contractual service margin at initial recognition is the negative of the fulfilment cash flows but not less than zero. The fulfilment cash flows at initial recognition are positive, so the contractual service margin is zero.

Part C: The *loss* at initial recognition = the fulfilment cash flows if they are positive = 219.71.

- The profit at initial recognition is zero if the insurance contracts are not onerous: one may not recognize income until the insurance services are provided.
- Losses may not be deferred, so the insurer recognizes a loss (in the statement of profit or loss) of 219.71

Part D: The insurance contract liability at initial recognition = the fulfilment cash flows (since the contractual service margin is zero) = 219.71.

For double-entry book-keeping,

- the loss (in the statement of profit or loss) is a debit
- the increase in the insurance contract liability is a credit

Part E: The fulfilment cash flows right after the premium is received = $750 / 1.06^3 + 40 = 669.71$.

Part F: The fulfilment cash flows at December 31, 20X1 = $750 / 1.06^2 + 40 = 707.50$.

Part G: The insurance finance expense on the fulfilment cash flows is

$$(750 / 1.06^2 + 40) – (750 / 1.06^3 + 40) = 37.78$$

The discount rate did not change here, so we can also compute this as $6\% \times 750 / 1.06^3 = 37.78$

Part H: The contractual service margin is zero at initial recognition, so its accretion of interest is also zero, and the contractual service margin at December 31, 20X1, is zero.

For the reconciliation of the insurance contract liability (source of changes in the fulfilment cash flows), the insurance finance expense is

- 37.78 for the present value of future cash outflows
- zero for the contractual service margin.

Part I: The contractual service margin is zero, so no profit or loss is allocated at December 31, 20X1.

Part J: The insurance contract liability at December 31, 20X1, is the fulfilment cash flows + the contractual service margin = 707.50 + 0 = 707.50

Part L: The insurer must reconcile the entries at the beginning and end of the year for

- the present value of future cash outflows
- the risk adjustment for non-financial risk
- the contractual service margin

Each reconciliation shows the

- changes related to future service
- changes related to current service
- insurance finance income or expense

For this exercise, the insurance finance expense is

- present value of future cash flows: 37.78
- contractual service margin: 0
- risk adjustment for non-financial risk: 0

The changes related to future service are

- present value of future cash flows (new contracts) = $-450 / 1.06^0 + 750 / 1.06^3 = 179.71$
- risk adjustment for non-financial risk = 40
- contractual service margin = 0

No claims occur in 20X1, no risk adjustment is released, and no contractual service margin is allocated to profit or loss, so the changes related to current service are

- present value of future cash flows = 0
- risk adjustment for non-financial risk = 0
- contractual service margin = 0

The reconciliation of the insurance contract liability for 20X1 is

Reconciliation of the insurance contract liability: source of changes in the fulfilment cash flows (20X1)

	Present Value of Future Cash Flows	*Risk Adjustment For Non-financial Risk*	*Contractual Service Margin*	*Insurance Contract Liability*
Opening Balance	–	–	–	–
Changes for Future Service	179.71	40.00	0.00	219.71
Cash Inflows	450.00			450.00
Insurance Finance Expenses	37.78	0.00	0.00	37.78
Changes for Current Service	0.00	0.00	0.00	0.00
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	667.49	40.00	0.00	707.49

Part L: The contracts are onerous, so the liability for remaining coverage has two parts. At the beginning of the year:

- the loss component of the liability for remaining coverage = 219.71
- the liability for remaining coverage excluding the loss component = 669.71 – 219.71 = 450.00

We allocate the insurance finance expense proportionately to the two pieces. The proportions are

- loss component of the liability for remaining coverage: 219.71 / (219.71 + 450) = 32.81%
- liability for remaining coverage, excluding the loss component: 450 / (219.71 + 450) = 67.19%

The allocation of the insurance finance expense is

- the loss component of the liability for remaining coverage: 37.78 × 32.81% = 12.40
- the liability for remaining coverage, excluding the loss component: 37.78 × 67.19% = 25.38

After the allocation of the insurance finance expenses:

- the loss component of the liability for remaining coverage = 219.71 + 12.40 = 232.11
- the liability for remaining coverage, excluding the loss component: 450 + 25.38 = 475.38

In this exercise, the proportionate allocation is equalt to the accretion of interest (at 6%) to each part of the liability for remaining coverage. But accretion of interest does not work in realistic scenarios, with insurance contracts entering and leaving the group, claims occurring, and discount rates changing.

Part M: The insurer must reconcile

- the liability for remaining coverage, excluding the loss component
- the loss component of the liability for remaining coverage
- the liability for incurred claims

at the beginning and end of the year, showing

- insurance revenue

- insurance service expense
- insurance finance income or expense
- cash inflows and outflows

The opening balances are

- No claims have yet occurred in this exercise, so the liability for incurred claims is zero.
- The loss component of the liability for remaining coverage = $750 / 1.06^3 + 40 – 450 = 219.71$.
- The liability for remaining coverage excluding the loss component is the premium received of 450.

Revenue, expenses, and cash flows are

- insurance revenue = 0 (no allocation of the zero contractual service margin in 20X1)
- insurance service expense = 0 (no claims or directly attributable acquisition cash flows are incurred)
- insurance finance income or expense = 37.78
  - the expense increases the liability
- cash inflows = premium of 450
  - the cash inflow increases the liability

Reconciliation of the financial statements

	Liability for remaining coverage excluding loss component	*Liability for remaining coverage: loss component*	*Liability for incurred claims*	*Insurance Contract Liability*
Opening Balance	–	–	–	–
Cash Inflows	450.00	0.00	0.00	450.00
Insurance revenue	0.00	0.00	0.00	0.00
Insurance service expenses	0.00	219.71	0.00	219.71
Investment component	0.00	0.00	0.00	0.00
Insurance Finance Expenses	25.38	12.40	0.00	37.78
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	475.38	232.11	0.00	707.49

Part N: The insurance finance expense on the fulfilment cash flows for 20X2 is

$$(750 / 1.06^1 + 40) – (750 / 1.06^2 + 40) = 40.05$$

The discount rate did not change here, so we can compute this as $6\% \times 750 / 1.06^2 = 40.05$

The contractual service margin is zero, so its insurance finance expense is also zero.

The total insurance finance expense is 40.05.

Part O: The reconciliation of the insurance contract liability for 20X2 is

Reconciliation of the insurance contract liability: source of changes in the fulfilment cash flows (20X2)

	Present Value of Future Cash Flows	*Risk Adjustment For Non-financial Risk*	*Contractual Service Margin*	*Insurance Contract Liability*
Opening Balance	667.49	0.00	0.00	707.49
Changes for Future Service	0.00	0.00	0.00	0.00
Cash Inflows	0.00	0.00	0.00	0.00
Insurance Finance Expenses	40.05	0.00	0.00	40.05
Changes for Current Service	0.00	0.00	0.00	0.00
Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	707.54	0.00	0.00	747.54

Part P: We allocate the insurance finance expense proportionately to the two pieces. The proportions are

- loss component of the liability for remaining coverage: 232.11 / (232.11 + 475.38) = 32.81%
- liability for remaining coverage, excluding the loss component: 475.38 / (232.11 + 475.38) = 67.19%

No estimates and revised in this exercise, so the proportions are the same in 20X2 as in 20X1.

- If claims are re-estimated upward, the entire change is allocated to the loss component of the liability for remaining coverage, so the proportions for the two parts change.
- If claims are re-estimated downward, the entire change is allocated to the loss component of the liability for remaining coverage until it becomes zero (and the rest becomes the contractual service margin), so the proportions for the two parts change.

The allocation of the insurance finance expense is

- the loss component of the liability for remaining coverage: 40.05 × 32.81% = 13.14
- the liability for remaining coverage, excluding the loss component: 40.05 × 67.19% = 26.91

After the allocation of the insurance finance expenses:

- the loss component of the liability for remaining coverage = 232.11 + 13.14 = 245.25
- the liability for remaining coverage, excluding the loss component: 475.38 + 26.91 = 502.29

Part Q: The reconciliation of the financial statements for 20X2 is

Reconciliation of the financial statements (20X2)

	Liability for remaining coverage excluding loss component	*Liability for remaining coverage: loss component*	*Liability for incurred claims*	*Insurance Contract Liability*
Opening Balance	475.38	232.11	0.00	707.49
Cash Inflows	0.00	0.00	0.00	0.00
Insurance revenue	0.00	0.00	0.00	0.00
Insurance service expenses	0.00	0.00	0.00	0.00
Investment component	0.00	0.00	0.00	0.00
Insurance Finance Expenses	26.91	13.14	0.00	40.05

Cash Outflows	0.00	0.00	0.00	0.00
Closing Balance	502.29	245.25	0.00	

Part R: The insurance finance expense on the fulfilment cash flows for 20X3 is

$$(750 / 1.06^0 + 40) – (750 / 1.06^1 + 40) = 42.45$$

The discount rate did not change here, so we can also compute this as $6\% \times 750 / 1.06^1 = 42.45$

The insurance finance expense on the contractual service margin for 20X3 is zero.

The total insurance finance expense is 42.45

Part S: The claim for 750 is paid in 20X3, and the risk adjustment for non-financial risk is released.

The reconciliation of the insurance contract liability for 20X3 is

Reconciliation of the insurance contract liability: source of changes in the fulfilment cash flows (20X3)

	Present Value of Future Cash Flows	*Risk Adjustment For Non-financial Risk*	*Contractual Service Margin*	*Insurance Contract Liability*
Opening Balance	707.54	40.00	0.00	747.54
Changes for Future Service	0.00	0.00	0.00	0.00
Cash Inflows	0.00	0.00	0.00	0.00
Insurance Finance Expenses	42.45	0.00	0.00	42.45
Changes for Current Service	0.00	(40.00)	0.00	(40.00)
Cash Outflows	(750.00)	0.00	0.00	(750.00)
Closing Balance	(0.01)	0.00	0.00	(0.01)

Part T: We allocate the insurance finance expense proportionately to the two pieces. The proportions are

- loss component of the liability for remaining coverage: 245.25 / (245.25 + 502.29) = 32.81%
- liability for remaining coverage, excluding the loss component: 502.29 / (245.25 + 502.29) = 67.19%

The allocation of the insurance finance expense is

- the loss component of the liability for remaining coverage: 42.45 × 32.81% = 13.93
- the liability for remaining coverage, excluding the loss component: 42.45 × 67.19% = 28.52

After the allocation of the insurance finance expenses:

- the loss component of the liability for remaining coverage = 245.25 + 13.93 = 259.18
- the liability for remaining coverage, excluding the loss component: 502.29 + 28.52 = 530.81

Part U: The incurral of 20X3 claim affects three entries on the reconciliation of the financial statements:

- the premium received for the claim is recognized as insurance revenue
  - reported under the liability for remaining coverage excluding the loss component
  - the negative entry reduces the liability
- the part of the claim for which the insurer is not compensated by premium is the reversal of accumulated value of the insurance service expense that was recognized at initial recognition

- " reported under the loss component of the liability for remaining coverage
- " the negative entry reduces the liability

! the incurred claim is an insurance service expense
- " reported under the liability for incurred claims
- " the positive entry increases the liability

! the claim payment is a cash outflow
- " reported under the liability for incurred claims
- " the negative entry reduces the liability

The allocation of the 20X3 claim is

! the loss component of the liability for remaining coverage: 750 × 32.81% = 246.08
! the liability for remaining coverage, excluding the loss component: 750 × 67.19% = 503.93

The allocation of the 20X3 release of the risk adjustment for non-financial risk is

! the loss component of the liability for remaining coverage: 40 × 32.81% = 13.12
! the liability for remaining coverage, excluding the loss component: 40 × 67.19% = 26.88

The sum of the 20X3 claim and its release of the risk adjustment for non-financial risk is

! the loss component of the liability for remaining coverage: 246.08 + 13.12 = 259.20
! the liability for remaining coverage, excluding the loss component: 503.93 + 26.88 = 530.81

The reconciliation of the financial statements for 20X3 is

Reconciliation of the financial statements (20X3)

	Liability for remaining coverage excluding loss component	*Liability for remaining coverage: loss component*	*Liability for incurred claims*	*Insurance Contract Liability*
Opening Balance	502.29	245.25	0.00	747.54
Cash Inflows	0.00	0.00	0.00	0.00
Insurance revenue	(530.81)	0.00	0.00	(530.81)
Insurance service expenses	0.00	(259.18)	750.00	490.82
Investment component	0.00	0.00	0.00	0.00
Insurance Finance Expenses	28.52	13.93	0.00	42.45
Cash Outflows	0.00	0.00	(750.00)	(750.00)
Closing Balance	0.00	0.00	0.00	0.00

Rounding errors cause the discrepancy of insurance service expense between the text and the exhibit. The exact figures are:

! Insurance revenue for the liability for remaining coverage excluding the loss component: -530.8232
! Insurance service expense for the loss component of the liability for remaining coverage: -259.1768

Multi-line insurers have many groups of insurance contracts. Insurance contracts are in the same portfolio if they are subject to the same risks and are managed together, so different types of contracts and contracts sold in different regions form distinct portfolios. Each portfolio has many groups, since the issue dates of contracts in a portfolio may not differ by more than a year, and onerous contracts and grouped separately from contracts that have little probability of becoming onerous or that may or may not become onerous.

The accounting entries are determined by group of insurance contracts, so the reconciliation exhibits are best completed by group. For presentation in the financial statements, the reconciliation exhibits are combined for all primary insurance contracts and all reinsurance contracts held.

Exercise 22.3: Changes in expected payments for future claims (not yet incurred)

Re-estimates differ for current and past claims (already incurred) vs future claims (not yet incurred):

- Re-estimates of *incurred claims* affect the liability for incurred claims.
  - The change is reported in profit or loss and does not affect the contractual service margin.
- Re-estimates of future claims that have *not yet occurred* affect the liability for remaining coverage.
  - If the change (i) does not cause the group of insurance contracts to become onerous and (ii) does not make a group of onerous contracts more or less onerous, the change in the fulfilment cash flows is offset by a change in the contractual service margin and does not affect profit or loss.

The contractual service margin for insurance contracts issued may not be negative.

- If the change causes a non-onerous group of insurance contracts to become onerous, the contractual service margin is reduced to zero and the rest of the change is reported as a loss in profit or loss.
- If the change makes a group of onerous contracts more or less onerous, the change is reported as
  - a loss in profit or loss if the group becomes more onerous
  - profit (a negative loss) in profit or loss if the group becomes less onerous
- If a change makes a group of onerous contracts to become no longer onerous, the part of the change until the group becomes non-onerous is reported as profit (a negative loss) in profit or loss, and the rest of the change creates a contractual service margin.

On January 1, 20X1, an insurer issues a group of insurance contracts with three year contract periods and

- it collects premium of 800
- it expects one claim for 750 on December 31, 20X3
- the discount rate for the fulfilment cash flows is 6% *per annum*
- the risk adjustment for non-financial risk is 40 and does not accrete interest

What is the contractual service margin at December 31, 20X1, if the estimate of the future claim is revised on that date to

A. 650?
B. 850?
C. 950?
D. What is the contractual service margin at December 31, 20X2, if the estimate of the claim is revised to 950 on December 31, 20X1, and to 900 on December 31, 20X2?

For each scenario, what is the profit or loss from the revision?

Part A: The fulfilment cash flows at initial recognition are

- future premium cash inflows = 800, discounted for 0 years
- future claim cash outflows = 750, discounted for 3 years
- risk adjustment for non-financial risk = 40, not discounted

The fulfilment cash flows = $-800 / 1.06^0 + 750 / 1.06^3 + 40 = (130.29)$.

The contractual service margin at initial recognition is the negative of the fulfilment cash flows = 130.29, since the contracts are not onerous.

The insurance finance expense on the contractual service margin is 130.29 × 6% = 7.82, and the contractual service margin after the accretion of interest = 130.29 × 106% = 138.11.

The insurance finance expense is the discount rate × the contractual service margin at the beginning of the

year. The change in the contractual service margin at the end of the year (shown below) does not affect the insurance finance expense during the year.

A decrease in the estimated cash outflows causing a reduction in the fulfilment cash flows

- is recognized in profit or loss if it relates to current or past service (such as an incurred claim)
- if offset by an increase in the contractual service margin if it relates to future service (as in this exercise)

On December 31, 20X1, the fulfilment cash flows decrease by $(750 – 650) / 1.06^2 = 89.00$, so the contractual service margin increases by 89.00 to 138.11 + 89.00 = 227.11.

- The contractual service margin is allocated to profit or loss evenly over the three years.
- The allocation to 20X1 is 227.11 / 3 = 75.70.
- The contractual service margin after the allocation to profit or loss = 227.11 – 75.70 = 151.41.

The order of this sequence is

- accrete interest on the contractual service margin at the beginning of the year
- adjust the contractual service margin for the claim re-estimate
- allocate the adjusted contractual service margin (with the accretion of interest) to profit or loss

The IFRS 17 *Basis for Conclusions* paragraph BC279 says:

> *… The Board considered whether … (b) the contractual service margin should be allocated before any adjustments made because of changes in fulfilment cash flows that relate to future service. However, the Board concluded that allocating the amount of the contractual service margin adjusted for the most up-to-date assumptions provides the most relevant information about the profit earned from service provided in the period and the profit to be earned in the future from future service.*

Part B: The contractual service margin at initial recognition, the insurance finance expense on the contractual service margin, and the contractual service margin after the accretion of interest are the same as for Part A.

An increase in the estimated cash outflows causing an increase in the fulfilment cash flows

- is recognized in profit or loss if it relates to current or past service (such as an incurred claim)
- if offset by a decrease in the contractual service margin if it relates to future service and the contractual service margin remains positive (as in this part of the exercise).

On December 31, 20X1, the fulfilment cash flows increase by $(850 – 750) / 1.06^2 = 89.00$, so the contractual service margin decreases by 89.00 to 138.11 – 89.00 = 49.11.

- The contractual service margin is allocated to profit or loss evenly over the three years.
- The allocation to 20X1 is 49.11 / 3 = 16.37
- The contractual service margin after the allocation to profit or loss = 49.11 – 16.37 = 32.74.

Part C: The contractual service margin at initial recognition, the insurance finance expense on the contractual service margin, and the contractual service margin after the accretion of interest are the same as for Part A.

An increase in the estimated cash outflows causing an increase in the fulfilment cash flows related to future service decreases the contractual service margin but not below zero. The remaining part of the increase in the fulfilment cash flows is recognized in profit or loss and becomes the loss component of the liability for remaining coverage. Similarly, an increase in the estimated cash outflows causing an increase in the fulfilment cash flows related to future service for a group of onerous contracts (whose contractual service margin is already zero) is added to the loss component of the liability for remaining coverage.

On December 31, 20X1, the fulfilment cash flows increase by $(950 – 750) / 1.06^2 = 178.00$.

- The contractual service margin decreases from 138.11 to zero.
- The remaining increase in the fulfilment cash flows is recognized in profit or loss: 178 – 138.11 = 39.89.

For the reconciliation of the insurance contract liability, this loss is a change related to future service (labeled as a loss on onerous contracts).

- The fulfilment cash flows are now $950 / 1.06^2 + 40 = 885.50$.
  - Note: 707.50 + 178.00 = 885.50
- The contractual service margin is zero, so the insurance contract liability is 885.50 + 0 = 885.50.
- The liability for remaining coverage is divided between
  - the loss component of the liability for remaining coverage = 39.89
  - the liability for remaining coverage excluding the loss component = 885.50 – 39.89 = 845.61.

The loss component of the liability for remaining coverage was zero at the beginning of the year, so we can not derive the insurance finance expense on the loss component as the accretion of interest on the beginning value. IFRS 17 uses the proportionate method, but the insurer may decide the order as

- first adjust the loss component for the re-estimate of future cash flows and then allocate the insurance finance expense (as though the re-estimate of the cash flows occurs at the beginning of the year)
- first allocate the insurance finance expense and then adjust the loss component for the re-estimate of future cash flows (as though the re-estimate of the cash flows occurs at the end of the year)

In practice, accountants compile figures at valuation dates and do not know when the re-estimates occur.

The division between (i) the loss component of the liability for remaining coverage and (ii) the liability for remaining coverage excluding the loss component is used for the reconciliation of the financial statements.

Part D: On December 31, 20X1, the present value of future cash flows is $950 / 1.06^2 = 845.50$. The present value of future cash flows here is the fulfilment cash flows minus the risk adjustment for non-financial risk.

The allocation percentages for 20X2 (computed in Part C) are

- the loss component of the liability for remaining coverage: 39.89 / (39.89 + 845.61) = 4.50%
- the liability for remaining coverage excluding the loss component: 845.61 / (39.89 + 845.61) = 95.50%

The insurance finance expense in 20X2 is 845.50 × 6% = 50.73, which is allocated proportionately:

- the loss component of the liability for remaining coverage: 50.73 × 4.50% = 2.28
- the liability for remaining coverage excluding the loss component 50.73 × 95.50% = 48.45

The liability for remaining coverage at December 31, 20X2, is

- the loss component of the liability for remaining coverage: 39.89 + 2.28 = 42.17
- the liability for remaining coverage excluding the loss component 845.61 + 48.45 = 894.06

The estimate of the claim is revised on December 31, 20X2, from 950 to 900, so the liability for remaining coverage decreases by $(950 – 900) / 1.06^1 = 47.17$.

- If the decrease in the fulfilment cash flows is less than the loss component of the liability for remaining coverage, the decrease is applied entirely to the loss component of the liability for remaining coverage.
  - The decrease reduces the loss component and is reported as profit (negative loss) in profit or loss.
- If the decrease in the fulfilment cash flows is more than the loss component of the liability for remaining coverage (as in this exercise), the decrease is applied first to the loss component, bringing it to zero.
  - The change in the loss component is recognized as profit in the statement of profit or loss of 42.17.
- The remaining 47.17 – 42.17 = 5.00 is applied to the liability for remaining coverage excluding the loss component, bringing it to 894.06 – 5.00 = 889.06.

" This 5.00 is not recognized in profit or loss but is added to the contractual service margin, changing it from zero to 5.

The contractual service margin of 5.00 is allocated to profit or loss in proportion to the coverage units, which are assumed the same for each year in this exercise. Only 20X2 and 20X3 remain, so 2.50 is allocated to profit or loss in 20X2 and the contractual service margin at December 31, 20X2, is 5.00 – 2.50 = 2.50.

Insurance revenue is recognized for claims and services that are compensated by (the accumulated value of) the premium. Paragraph 83 says:

> *An entity shall present in profit or loss insurance revenue arising from the groups of insurance contracts issued. Insurance revenue shall depict the provision of coverage and other services arising from the group of insurance contracts at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those services.*

For simplicity, assume the discount rate is zero, premium of 100 is received on January 1, 20X1, and a claim for 400 is expected to be incurred and paid on December 31, 20X2.

- In 20X1, insurance revenue is zero, cash increases 100, the insurance contract liability increases 400, and the insurance service expense is 400 – 100 = 300 (recognized in profit or loss).
- In 20X2, insurance revenue is 100 (shown as a negative entry on the reconciliation exhibits).

Exercise 22.4: Changes in the estimated claim payment

- An insurance contract issued on December 31, 20X0, expects one claim to be paid on December 31, 20X5, for 100. The entire premium is collected and acquisition costs are paid at initial recognition.
  - The discount rate at initial recognition is 6% *per annum*.
  - The contractual service margin (CSM) at initial recognition is 35.
  - The coverage units are the same from 12/31/20X0 through 12/31/20X5.
- On December 31, 20X1, the insurer revises the estimate of the claim payment to 120.

A. What are the fulfilment cash flows at initial recognition?
B. What is the contractual service margin on December 31, 20X1, before the allocation to profit or loss?
C. What is the contractual service margin on December 31, 20X1, after the allocation to profit or loss?
D. If the estimated claim does not change further, what is the allocation to profit or loss in 20X2 and 20X3?
E. If the revised estimate of the claim is 180 on December 31, 20X1, what is the 20X1 profit or loss?

Part A: At initial recognition, the contractual service margin is the negative of the fulfilment cash flows (capped from below at zero). The contractual service margin at initial recognition is 35, so the fulfilment cash flows are –35: the present value of future cash outflows (including the acquisition cash flows) plus the risk adjustment for non-financial risk is 35 less than the present value of future cash inflows.

The present value of the cash outflows for claims is $100 / 1.06^5 = 74.73$, but the exercise does not specify the risk adjustment for non-financial risk, the directly attributable acquisition cash flows, or premium cash inflows.

Part B: The change in the contractual service margin has two parts:

- The insurance finance expense on the contractual service margin (the time value of money).
- The change in the future cash outflows (the revised estimate of the claim payment).

The insurance finance expense is the contractual service margin at the beginning of the year × the discount rate determined at initial recognition = 74.73 × 6% = 4.48. The contractual service margin before the change in the present value of future cash outflows is 35 + 4.48 = 39.48.

The change in the estimated present value of the future cash outflows is $(120 – 100) / 1.06^4 = 15.84$, so the contractual service margin decreases by 15.84 (but may not fall below zero). The contractual service margin after the change in the present value of future cash outflows but before the allocation to profit or loss is

$$35 + 4.48 – 15.84 = 23.64.$$

Part C: The insurance units are the same for the five years December 31, 20X0, through December 31, 20X5. The contractual service margin of 23.64 is spread evenly over the five years as 23.64 / 5 = 4.73 allocated to profit in 20X1. The contractual service margin after the allocation to profit or loss is 23.64 – 4.73 = 18.91.

Part D: Each year, the contractual service margin accretes interest before the allocation to profit or loss.

- 20X2:
  - the accretion of interest is 6% × 18.91 = 1.13
  - the contractual service margin before the allocation to profit or loss is 18.91 + 1.13 = 20.04
  - the allocation to profit or loss is 20.04 / 4 = 5.01
  - the contractual service margin after the allocation to profit or loss is 20.04 – 5.01 = 15.03

- 20X3:
  - the accretion of interest is 6% × 15.03 = 0.90
  - the contractual service margin before the allocation to profit or loss is 15.03 + 0.90 = 15.93
  - the allocation to profit or loss is 15.93 / 3 = 5.31
  - the contractual service margin after the allocation to profit or loss is 15.93 – 5.31 = 10.62

The nominal allocation to profit or loss increases each year; the present values are the same:

- $4.73 \times 1.06 = 5.01$
- $5.01 \times 1.06 = 5.31$

IFRS 17 allows also an allocation that gives the same nominal values each year.

Part E: The change in the estimated present value of the future cash outflows is $(180 - 100) / 1.06^4 = 63.37$, so the contractual service margin decreases by 63.37 but may not fall below zero.

- The contractual service margin is the greater of (i) zero or (ii) $35 + 4.48 - 63.37 = (23.89)$.
- The -23.89 is recognized in profit or loss, and the contractual service margin becomes zero.

The occurrence date of the claim affects profit or loss.

- If the claim occurs before the estimated claim payment is revised, the full change in the estimated claim payment is recognized in profit or loss.
- A change in the estimate of claims that have not yet occurred is first offset by changes in the contractual service margin.

Accountants know the year (or half-year or quarter-year) of a change, not the day. If the occurrence date and the revision of the estimated claim payment are in the same year (or half-year or quarter-year), the occurrence date is presumed to come first.

Illustration: If the occurrence date and the revision of the estimated claim payment are both in 20XX, the claim is assumed to occur first and the revision of the estimate claim payment for an incurred claim, so the entire revision is recognized in profit or loss.

The rules governing the recognition of profit or loss from estimates of future claims are

- If the present value of the estimated claim payment decreases, the contractual service margin increases to offset, and the immediate profit or loss is zero. However, the greater contractual service margin causes a greater allocation each year to profit or loss, as the profit is earned over the contract period.

- If the present value of the estimated claim payment increases, the contractual service margin decreases to offset, but does not become negative. The amount of the increase in the present value of the estimated claim payment that is not offset by a decrease in the contractual service margin is recognized in profit or loss.

Exercise 22.5: Accounting for claim payments

An insurance contract has one claim expected on December 1, 20X1, for 100. The claim occurs on that day and is paid on December 15 for 100.

A. What are the accounting entries on December 1?
B. What are the accounting entries on December 15?

Part A: The occurrence of the claim causes

- a reduction in the liability for remaining coverage = insurance service revenue
- an offsetting increase in the liability for incurred claims = insurance service expense

The net insurance service result is zero.

Part B: The payment of the claim causes

- a reduction in the liability for incurred claims
- an offsetting reduction in the cash asset

No revenue or expense is reported. Payment of a claim for its expected value does not affect profit or loss.

Exercise 22.6: Re-estimates of incurred claims

An insurer re-estimates the liability for an incurred claim from 200 to 300. What are the effects on

A. The insurance contract liability
B. The contractual service margin
C. Insurance finance income or expense
D. The statement of profit or loss

Part A: The insurance contract liability has two parts:

- The liability for remaining coverage
- The liability for incurred claims

The liability for remaining coverage does not change. The liability for incurred claims increases 100.

Part B: The contractual service margin reflects the expected profit on the unearned portion of the contract (the remaining coverage). Changes in the liability for incurred claims do not affect the contractual service margin.

Part C: Insurance finance income or expense reflects the effect of the time value of money: the accretion of interest on discounted values. The liability for incurred claims is a present value, so the insurance finance expense in future periods increases by the discount from the claim cost. On the day the claim is re-estimated, the insurance finance expense does not change.

Part D: The statement of profit or loss shows a loss of 100 on the day the claim is re-estimated.

- Changes to the liability for remaining coverage affect the contractual service margin if it is more than zero.
  - If the contractual service margin becomes negative, further changes affect profit or loss.
- Changes to the liability for incurred claims affect profit or loss.