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# Agenda Paper 4A: DRM Model

## Illustrative Examples

May 2023

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# Disclaimer

This paper has been prepared for discussion at a public meeting of the International Accounting Standards Board (IASB). This paper does not represent the views of the IASB or any individual IASB member. Any comments in the paper do not purport to set out what would be an acceptable or unacceptable application of IFRS<sup>®</sup> Accounting Standards. The IASB's technical decisions are made in public and are reported in the IASB<sup>®</sup> *Update*.

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## List of abbreviations

- BD – Benchmark derivative
- BMIR – Benchmark interest rate
- CNOP – Current net open risk position
- Cr – Credit journal entry
- DCF – Discounting factor
- DD – Designated derivative
- Dr – Debit journal entry
- DRM – Dynamic risk management
- EVE – Economic value of equity
- FV – Fair value
- IR Swap or Swap – Interest rate swap
- LTD – Life to date
- Net  $\Delta$  – Net movements during the period
- NII – Net interest income
- NTI – Net trading income
- RMI – Risk management intention
- RMS – Risk management strategy
- $\Delta$ NII – Sensitivity in net interest income
- $\Delta$ EVE – Sensitivity in economic value of equity

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## Purpose of the demonstration

- The purpose of this paper is to illustrate the designation and application of the DRM model through a series of scenarios. Each scenario adds a level of complexity to the previous one.
- By illustrating the application of the DRM model through these scenarios, we aim to demonstrate:
  - the information that will be provided in the statement of profit or loss and statement of financial position;
  - how the various scenarios affect the designation of the risk mitigation intention and the construction of the benchmark derivative(s); and
  - how the DRM model provides a faithful representation of the risk management activities an entity has done to achieve its risk management strategy.
- This paper does not illustrate the capacity assessment as discussed by the IASB in its February 2023 meeting as this is still subject to further development.

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# Summary of scenarios illustrated

The application of the DRM Model is illustrated using the following scenarios<sup>1</sup>:

Simple scenarios – CNOP is comprised of a single financial asset and a single financial liability (together, the underlying items), with **aligned notionals**:

- **Scenario 1A:** Initiation of the model, with full risk mitigation (RMI = CNOP) in the **first reporting period**;
- **Scenario 1B:** Partial risk mitigation in the **second reporting period** (RMI < CNOP); and
- **Scenario 1C:** Unexpected changes occurred during the **second reporting period**;

Complex scenarios – CNOP is comprised of multiple financial assets and financial liabilities, and the entity has decided to partially mitigate its risk or mitigate its risks in an adjacent repricing period:

- **Scenario 2:** Designation of multiple financial assets and financial liabilities (including core demand deposits) with **aligned notionals** and **full risk mitigation** (RMI=CNOP);
- **Scenario 3:** Designation of multiple financial assets and financial liabilities with **misaligned notionals** and **full risk mitigation** (RMI = CNOP); and
- **Scenario 4:** Designation of multiple financial assets and financial liabilities with **misaligned notionals** and **partial risk mitigation** (RMI < CNOP) in an **adjacent repricing period**.

<sup>1</sup>For simplicity, we assumed that the DRM assessment periods are the same as the entity's reporting periods.

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# General assumptions

- The entity's annual reporting period runs from 1<sup>st</sup> January to 31<sup>st</sup> December;
- All financial assets and financial liabilities (together, the underlying items) designated in the CNOP meet the qualifying criteria;
- All underlying items designated in the CNOP are initially recognised at fair value, and subsequently measured at amortised cost using the effective interest method;
- Interest income (expense) are accrued on the financial asset (liability) during the reporting period and the accrued amount on the interest rate swap(s) are fully cash settled on 31<sup>st</sup> December each year;
- Interest rate swap(s) used for risk mitigation are bilateral agreements, ie they are not settled to market; they are also traded at the prevailing market rate at the beginning of the DRM assessment period;
- Fair value changes of the interest rate swap are recognised in the net trading income in the statement of profit or loss; and
- Yield curves demonstrated as at each reporting date are based on assumptions as detailed on the next page. They have been applied consistently for valuation purposes in all of the scenarios illustrated in this presentation.

For simplicity, accounting entries for the initial recognition of the financial asset(s), financial liability(ies) and the interest rate swap(s) are not shown in this paper. In addition, the accounting entries for the designated derivatives and the DRM adjustments are shown separately for illustration purposes in this presentation.

# Yield curve assumptions

It is assumed that the interest rate curves as at 1<sup>st</sup> January 20X1 (at **T0**) are as follows:

**Term structure of interest rates at T0**

<b>T0</b>	Swap Fixed Rate	Forward 12m Floating Rate	Zero Coupon Rate
Year 0			
1	4.00%	4.00%	4.00%
2	4.10%	4.20%	4.10%
3	4.19%	4.40%	4.20%
4	4.29%	4.60%	4.30%
5	4.38%	4.80%	4.40%

At the end of 31<sup>st</sup> December 20X1 (at **T1**), there is a parallel 100 basis points (bps) *upward shift* in forward interest rate curves due to changes in the market. The swap rate curve and the zero-coupon rate curve also shift upwards accordingly:

**Term structure of interest rates at T1**

<b>T1</b>	Swap Fixed Rate	Forward 12m Floating Rate	Zero Coupon Rate
Year 0			
1	5.00%	5.00%	5.00%
2	5.10%	5.20%	5.10%
3	5.19%	5.40%	5.20%
4	5.29%	5.60%	5.30%
5	5.38%	5.80%	5.40%

At the end of 31<sup>st</sup> December 20X2 (at **T2**), there is a parallel 300 bps *downward shift* in forward interest rate curves due to changes in the market. The swap rate curve and the zero-coupon rate curve also shift downwards accordingly:

**Term structure of interest rates at T2**

<b>T2</b>	Swap Fixed Rate	Forward 12m Floating Rate	Zero Coupon Rate
Year 0			
1	2.00%	2.00%	2.00%
2	2.10%	2.20%	2.10%
3	2.20%	2.40%	2.20%
4	2.29%	2.60%	2.30%
5	2.39%	2.80%	2.40%

There are no movements in interest rate curves at T3, T4 and T5.





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## Simple scenarios

CNOP is comprised of a single financial asset and a single financial liability with aligned notionals

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## Scenario 1 - Assumptions

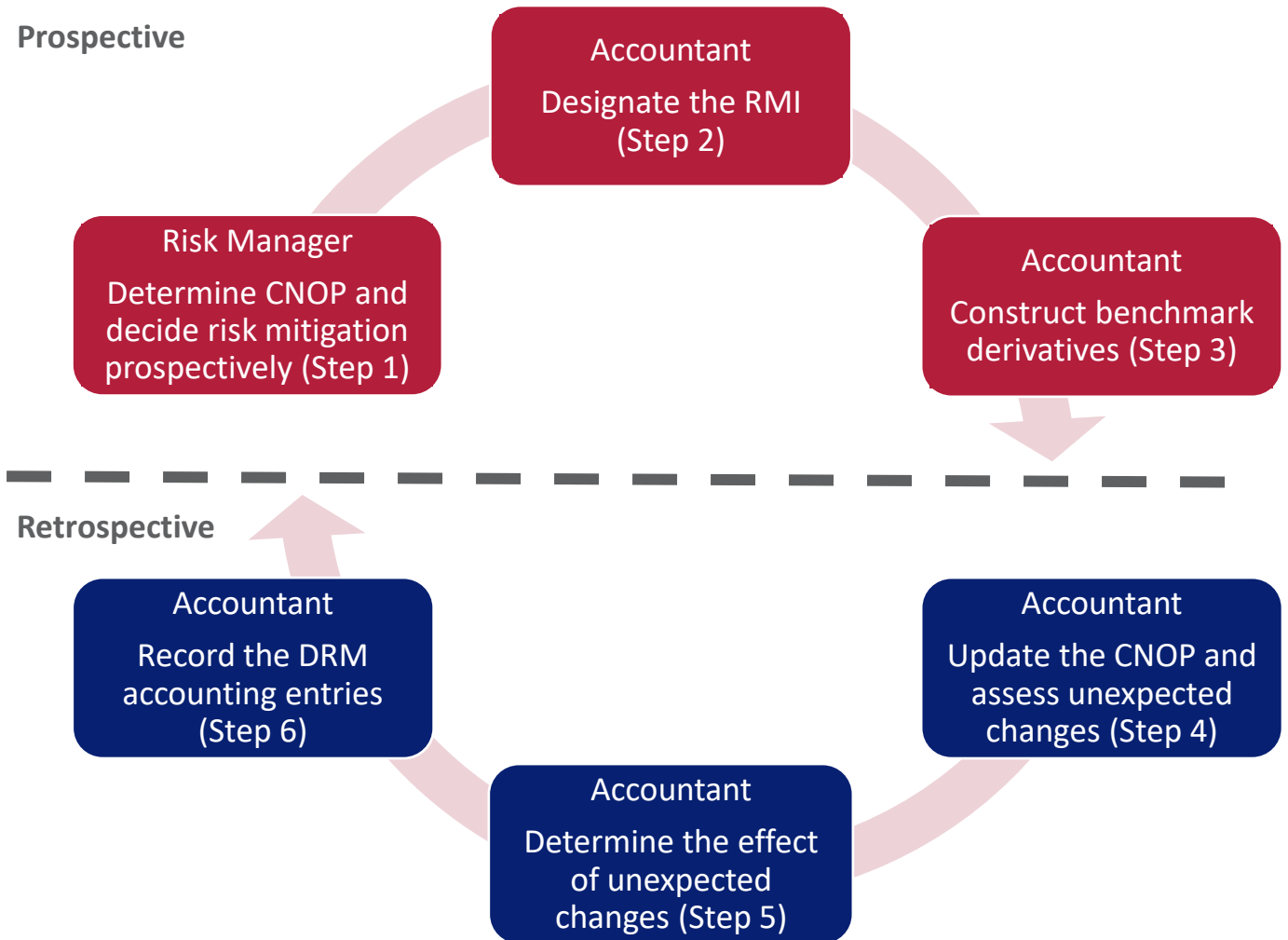
- In this simple model, it is assumed that the entity has advanced a five year fixed rate mortgage, fully funded by a five year floating rate liability:
  - Financial asset: 4.382% fixed rate mortgage with a notional of CU1,000;
  - Financial liability: 12 month (12m) benchmark rate floating loan with a notional of CU1,000.
- In order to fully mitigate the interest rate risk, the entity has entered into a vanilla five year interest rate swap:
  - Pay leg: Notional of CU1,000; coupon rate of 4.382% fixed;
  - Receive leg: Notional of CU1,000; coupon rate of 12m benchmark rate floating.
- The entity's risk management strategy (RMS) can be found on page 11. Consistent with its RMS, the entity intends to fully mitigate its interest rate risk exposure, and has traded derivatives with external counterparties accordingly.
- The entity is expected to reinvest its existing financial assets and refinance its existing financial liabilities after their expected maturity dates at the prevailing market rate at the maturity date.

# RMS and DRM cycle

## Risk Management Strategy (RMS)

Key components documented in the entity's RMS:

- Manages its entity-level interest rate risk for a 5-year time horizon, based on exposure in  $\Delta NII$
- Managed risk is the 12 month benchmark rate
- Uses notional repricing gap as the key risk metric, divided into 5 yearly repricing periods
- Sets the risk limit as a notional repricing gap of -CU500 to +CU500 in each of the repricing periods (target profile)
- Manages the changes in risks annually (DRM assessment period)
- Includes expected cash flows based on internal models.



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## Scenario 1A

Designation of the model, with full risk mitigation (RMI = CNOP) in the **first reporting period**

# Determine CNOP and designate a derivative

## Current net open risk position (CNOP)

On 1<sup>st</sup> January 20X1, the entity designates a single fixed rate financial asset and a single floating rate liability in its CNOP. The entity’s fixed rate and floating rate exposures are illustrated as follows:

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed rate exposures</b>					
Financial asset	1,000	1,000	1,000	1,000	1,000
<b>Total fixed rate exposures</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>
<b>Floating rate exposures</b>					
Financial liability	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
<b>Total floating rate exposures</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>

## Designated derivative (DD)

At the same time, the entity designates a 5-year pay fixed, receive floating IR swap with a notional of CU1,000:

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed leg</b>					
DD Swap	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
<b>Total fixed</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>
<b>Floating leg</b>					
DD Swap	1,000	1,000	1,000	1,000	1,000
<b>Total floating</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>

# Designating RMI

## Risk mitigation intention

On 1<sup>st</sup> January 20X1, the entity designates the RMI for the period (from 1<sup>st</sup> January 20X1 to 31<sup>st</sup> December 20X1). Once the RMI for the period is designated, it cannot be changed retrospectively.

The RMI is based on the available risk to mitigate in each time period as calculated for the CNOP, as well as the extent of risk being transferred out based on the DD.

If there was a breach of the prospective assessments due to entity over mitigating its risk, adjustments to the RMI would be necessary (See Scenario 4).

### As at 1 January 20X1

<u>CNOP</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,000	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
<u>Designated Derivative</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Floating exposures	1,000	1,000	1,000	1,000	1,000

Determine the RMI based on CNOP and DD



RMI represents the risk in the underlying items

<u>Risk Mitigation Intention</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,000	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Management priority	ΔNII	ΔNII	ΔNII	ΔNII	ΔNII
Prospective assessment	Pass	Pass	Pass	Pass	Pass



# Summary of BD and DD

- In summary, the entity would have the following designated and benchmark derivatives.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the 'lower-of' test).
- In this scenario, the BD is exactly the equal opposite of the DD.

<u>DD Swap 1</u>					<u>BD Swap 1</u>				
Description	Notional	On-market rate	Start Date	End Date	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	5 yrs fixed	(1,000)	4.38%	1 Jan 20X1 31 Dec 20X5	Receive fixed	5 yrs fixed	1,000	4.38%	1 Jan 20X1 31 Dec 20X5
Receive floating	5 yrs floating	1,000	12m BMIR		Pay floating	5 yrs floating	(1,000)	12m BMIR	



# Valuation of designated derivative

Step 4&5 are only necessary when there is an unexpected change.

- The designated derivative is valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period 1

DD Swap Valuation						
Years	1	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)	(43.82)	
Receive Floating	40.00	42.00	44.00	46.00	48.00	
Derivative Net C/F	(3.82)	(1.82)	0.18	2.18	4.18	
DCF	0.96	0.92	0.88	0.85	0.81	Total FV
Derivative Fair Value	(3.68)	(1.68)	0.16	1.84	3.37	0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period 1

DD Swap Valuation					
Years	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)	
Receive Floating	50.00	52.00	54.00	56.00	
Derivative Net C/F	6.18	8.18	10.18	12.18	
DCF	0.95	0.91	0.86	0.81	Total FV
Derivative Fair Value	5.88	7.40	8.74	9.90	31.93

In this example, BD valuations will be equal and opposite of the DD valuations

# Summary of valuations (BD and DD)

- Below is a summary of the valuation for each derivative and the combined total.
- In this scenario, the BDs are exactly the equal opposite of the DDs.

**End of period valuation**

	31 December 20X1
<b><u>Designated Derivative</u></b>	CU
Clean fair value	31.93
Life to date (LTD) cash settled	(3.82)
Total LTD fair value changes	28.11
<b><u>Benchmark Derivative</u></b>	
Clean fair value	(31.93)
LTD cash settled	3.82
Total LTD fair value changes	(28.11)

This is the valuation (present value) of the **outstanding** or unrealised future cash flows of the swap at end of the period

This is the value of the **realised LTD accrual** (settled cash)

This is the value of the **total LTD gains** recognised in the P&L

## Calculation of the DRM adjustment

DRM adjustment is recognised in the statement of financial position, as the lower of (in absolute amounts):

- (i) the cumulative gain or loss on the designated derivatives from the inception of the DRM model; and
- (ii) the cumulative change in the fair value of the risk mitigation intention attributable to repricing risk from inception of the DRM model. This would be calculated using the benchmark derivatives as a proxy.

So in this example, (i) CU28.11 vs (ii) **CU(28.11)**

Once recognised, the realised benefit from the DRM will be recognised in the net interest income in statement of profit or loss over time, based on the lower of the coupon accrual profile between the benchmark derivative and the designated derivative, which means **CU(3.82)** in 20X1.

# Accounting entries for the period

Accounting entries for the year ending 20X1		
Underlying items	Dr Financial asset 43.82 Cr Interest income 43.82 <i>(Being the recognition of interest income accrued)</i>	
	Dr Interest expense 40.00 Cr Financial liability 40.00 <i>(Being the recognition of interest expense accrued)</i>	
	Dr Financial liability 40.00 Cr Financial asset 43.82	
	Dr Cash (net) 3.82 <i>(Being the cash settlement of the interest income and expense accrued) (Net interest income recognised = 3.82)</i>	
	Designated derivative	Dr Designated derivative 28.11 Dr Net trading income 3.82 Cr Net trading income 31.93 <i>(Being the recognition of the fair value movement on the derivative, including the accrued element. Total gain in P&amp;L is (31.93 - 3.82) =28.11)</i>
		Dr Designated derivative 3.82 Cr Cash 3.82 <i>(Being the cash settlement of the accrual)</i>
DRM adjustment		Dr Net trading income 28.11 Cr DRM adjustment 28.11 <i>(Being the initial recognition of the DRM adjustment)</i>
		Dr Net interest income 3.82 Cr DRM adjustment - realised benefit 3.82 <i>(Being the realisation of the DRM benefit - Total DRM adjustment as at 31 December 20X1 is 31.93 as this is the future NII available to the entity)</i>

For the period, the interest income and expense are driven by:  
CU1,000 financial asset @ 4.38% fixed; and  
CU1,000 financial liability @ 4.00% floating

Snapshot - 31 December 20X1	B/fwd	Net Δ	C/fwd
Net interest income	0.00	0.00	0.00
Net trading income	0.00	0.00	0.00
Derivative	0.00	31.93	31.93
DRM adjustment	0.00	(31.93)	(31.93)
Cash	0.00	0.00	0.00

The entity:

- has managed to fully mitigate its exposure to interest rate risk (credit margin and other margins are not considered in this example);
- has a DRM adjustment of CU(31.93) in its statement of financial position, to be utilised and recognised in the NII in the statement of profit or loss in future periods.

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## Scenario 1B

Partial risk mitigation in the **second reporting period** (RMI < CNOP)

# Determining CNOP

## Current net open risk position

On 1<sup>st</sup> January 20X2, there has been no changes to the financial assets and financial liabilities and their expected maturities.

The entity also considers the reinvestment of existing financial assets and refinancing of existing financial liabilities after their expected maturity dates as floating rate exposures.

The entity’s total repricing gap is illustrated as per the table to the right.

	20X2 CU	20X3 CU	20X4 CU	20X5 CU	20X6 CU
<b>Fixed exposures</b>					
Financial Asset	1,000	1,000	1,000	1,000	
<b>Total Fixed</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	
<b>Floating exposures</b>					
Financial liability	(1,000)	(1,000)	(1,000)	(1,000)	
Reinvestment of financial asset					1,000
Refinancing of financial liability					(1,000)
<b>Total Floating</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>0</b>

# Designated Derivatives (DD)

## Designated Derivatives

On 1<sup>st</sup> January 20X2, the entity traded an additional vanilla interest rate swap (see (b) below) in order to mitigate 80% of the repricing risk (ie reduce the risk mitigation going forward):

- a) a 5-year pay fixed receive floating IR swap with notional of CU1,000, traded on 1<sup>st</sup> January 20X1 (DD Swap 1)
- b) a 4-year receive fixed pay floating IR swap with notional of CU200, traded on 1<sup>st</sup> January 20X2 (DD Swap 2) - additional

	20X2 CU	20X3 CU	20X4 CU	20X5 CU	20X6 CU
Fixed exposures					
DD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	
DD Swap 2	200	200	200	200	
<b>Total Fixed</b>	<b>(800)</b>	<b>(800)</b>	<b>(800)</b>	<b>(800)</b>	
Floating exposures					
DD Swap 1	1,000	1,000	1,000	1,000	
DD Swap 2	(200)	(200)	(200)	(200)	
<b>Total Floating</b>	<b>800</b>	<b>800</b>	<b>800</b>	<b>800</b>	

# Designating RMI

## Risk mitigation intention

On 1<sup>st</sup> January 20X2, the entity designates the RMI for the period (from 1<sup>st</sup> January 20X2 to 31<sup>st</sup> December 20X2). Once the RMI for the period is designated, it cannot be changed retrospectively.

The RMI is based on the available risk to mitigate in each repricing period as calculated for the CNOP, as well as the extent of risk being transferred out based on the DDs.

If there was a breach of the prospective assessments due to entity over mitigating its risk, adjustments to the RMI would be necessary (See Scenario 4).

### As at 1 January 20X2

<u>CNOP</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,000	1,000	
Floating exposures	(1,000)	(1,000)	(1,000)	(1,000)	0
<u>Designated Derivative</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	(800)	(800)	(800)	(800)	
Floating exposures	800	800	800	800	

Determine the RMI based on CNOP and DDs



<u>Risk Mitigation Intention</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	800	800	800	800	0
Floating exposures	(800)	(800)	(800)	(800)	0
Management Priority	ΔNII	ΔNII	ΔNII	ΔNII	ΔNII
Prospective assessment	Pass	Pass	Pass	Pass	Pass



# Construction of the benchmark derivative

## Benchmark Derivatives (BDs)

On 1<sup>st</sup> January 20X2, an additional vanilla interest rate swap (see (b) below) is required as a BD to represent RMI.

- (a) a 5-year receive fixed pay floating IR swap with notional of CU1,000, which has already been constructed (BD Swap 1)
- (b) a 4-year pay fixed receive floating IR swap with notional of CU200, which is constructed as at 1<sup>st</sup> January 20X2 (BD Swap 2)

The aggregation of the two benchmark derivatives are used as documentation of the RMI for this period; and are subsequently used for measurement purposes.

<u>Risk Mitigation Intention</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	800	800	800	800	
Floating exposures	(800)	(800)	(800)	(800)	



Construct the BDs based on RMI

<u>Benchmark Derivatives</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
BD Swap 1	1,000	1,000	1,000	1,000	
BD Swap 2	(200)	(200)	(200)	(200)	
<b>Total fixed</b>	800	800	800	800	
<b>Floating exposures</b>					
BD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	
BD Swap 2	200	200	200	200	
<b>Total floating</b>	(800)	(800)	(800)	(800)	

# Summary of BDs and DDs

- In summary, the entity would have the following designated and benchmark derivatives.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the 'lower-of' test).
- In this scenario, the BDs are exactly the equal opposite of the DDs.

<u>DD Swap 1</u>					<u>BD Swap 1</u>				
Description	Notional	On-market rate	Start Date	End Date	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	(1,000)	4.38%	1 Jan 20X1	31 Dec 20X5	Receive fixed	1,000	4.38%	1 Jan 20X1	31 Dec 20X5
Receive floating	1,000	12m BMIR			Pay floating	(1,000)	12m BMIR		

<u>DD Swap 2</u>					<u>BD Swap 2</u>				
Description	Notional	On-market rate	Start Date	End Date	Description	Notional	On-market rate	Start Date	End Date
Receive fixed	200	5.29%	1 Jan 20X2	31 Dec 20X5	Pay fixed	(200)	5.29%	1 Jan 20X2	31 Dec 20X5
Pay floating	(200)	12m BMIR			Receive floating	200	12m BMIR		

# Valuation of designated derivatives

- The designated derivatives are valued as at 1<sup>st</sup> January 20X2 and 31<sup>st</sup> December 20X2.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X2 - beginning of the period 2

DD Swap 1 Valuation					
Years	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)	
Receive Floating	50.00	52.00	54.00	56.00	
Derivative Net C/F	6.18	8.18	10.18	12.18	
DCF	0.95	0.91	0.86	0.81	Total FV
Derivative Fair Value	5.88	7.40	8.74	9.90	31.93

as at 31st Dec 20X2 / 1st Jan 20X3 - end of the period 2

DD Swap 1 Valuation				
Years	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	
Receive Floating	20.00	22.00	24.00	
Derivative Net C/F	(23.82)	(21.82)	(19.82)	
DCF	0.98	0.96	0.94	Total FV
Derivative Fair Value	(23.36)	(20.94)	(18.57)	(62.86)

DD Swap 2 Valuation

Years	2	3	4	5	
Receive Fixed	10.57	10.57	10.57	10.57	
Pay Floating	(10.00)	(10.40)	(10.80)	(11.20)	
Derivative Net C/F	0.56	0.17	(0.23)	(0.63)	
DCF	0.95	0.91	0.86	0.81	Total FV
Derivative Fair Value	0.55	0.16	(0.19)	(0.51)	0.00

DD Swap 2 Valuation

Years	3	4	5	
Receive Fixed	10.57	10.57	10.57	
Pay Floating	(4.00)	(4.40)	(4.80)	
Derivative Net C/F	6.57	6.17	5.77	
DCF	0.98	0.96	0.94	Total FV
Derivative Fair Value	6.44	5.92	5.41	17.78

# Summary of valuations (BD and DD)

- Below is a summary of the LTD valuation for each derivative and the combined total:
- In this scenario, the BDs are exactly the equal opposite of the DDs.

**End of period valuation**

	31 December 20X1	31 December 20X2
<b>Designated Derivative</b>	CU	CU
Clean fair value	31.93	(45.08)
Life to date (LTD) cash settled	(3.82)	2.92
Total LTD fair value changes	28.11	(42.16)
<b>Benchmark Derivative</b>		
Clean fair value	(31.93)	45.08
LTD cash settled	3.82	(2.92)
Total LTD fair value changes	(28.11)	42.16

CU(62.86) of DD Swap 1 FV  
+ CU17.78 of DD Swap 2 FV  
= CU(45.08) total PV

CU(3.82) of Period 1 cash settled +  
CU6.18+CU0.56 of Period 2 cash settled  
= CU2.92 LTD cash settled

## Calculation of the DRM adjustment

DRM adjustment is recognised in the statement of financial position, as the lower of (in absolute amounts):

- (i) the cumulative gain or loss on the designated derivatives from the inception of the DRM model; and
- (ii) the cumulative change in the fair value of the risk mitigation intention attributable to repricing risk from inception of the DRM model. This would be calculated using the benchmark derivatives as a proxy.

So in this example, (i) **CU(42.16)** vs (ii) CU42.16

Once recognised, the realised benefit from the DRM will be recognised in the net interest income in statement of profit or loss over time, based on the lower of the coupon accrual profile between the benchmark derivative and the designated derivative, which means CU2.92 life-to-date.

# Accounting entries for the period

Accounting entries for the year ending 20X2		
Underlying items	Dr Financial asset 43.82 Cr Interest income 43.82 <i>(Being the recognition of interest income accrued)</i>	
	Dr Interest expense 50.00 Cr Financial liability 50.00 <i>(Being the recognition of interest expense accrued)</i>	
	Dr Financial liability 50.00 Cr Financial asset 43.82 Cr Cash 6.18 <i>(Being the cash settlement of the interest income and expense accrued) (Net interest expense recognised = 6.18)</i>	
	Designated derivative	Dr Net trading income 77.01 Cr Net trading income 6.74 Cr Designated derivative 70.27 <i>(Being the recognition of the fair value movement on the derivative, including the accrued element. Total loss in P&amp;L is (77.01-6.74) =70.27)</i>
		Dr Cash 6.74 Cr Designated derivative 6.74 <i>(Being the cash settlement of the accrual)</i>
		DRM adjustment
Dr DRM adjustment 6.74 Cr Net interest income 6.74 <i>(Being the realisation of the DRM benefit - Total DRM adjustment as at 31 December 20X2 is 45.08 as this is the future NII available to the entity)</i>		

For the period, the interest income and expense are driven by:  
CU1,000 financial asset @ 4.38% fixed; and  
CU1,000 financial liability @ 5.00% floating

Snapshot - 31 December 20X2			
	B/fwd	Net Δ	C/fwd
Net interest income	0.00	(0.56)	(0.56)
Net trading income	0.00	0.00	0.00
Derivative	31.93	(77.01)	(45.08)
DRM adjustment	(31.93)	77.01	45.08
Cash	0.00	0.56	0.56

The entity:

- has managed to mitigate 100% of its exposure to interest rate risk in the first year and 80% of its exposure in the second year;
- has achieved its strategy successfully with no misalignment;
- has a DRM adjustment of CU45.08 in its statement of financial position, to be utilised and recognised in the NII in the statement of profit or loss in future periods; and
- has interest income of CU0.56 at the end of the period, due to CU200 of unmitigated risk in the second period.

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## Scenario 1C

Unexpected changes occurred during  
the **second reporting period**

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## Scenario 1C – background

- This scenario **still focuses on the second period** (ie between 1<sup>st</sup> January 20X2 and 31<sup>st</sup> December 20X2), and demonstrates how an entity assesses and captures the effects of unexpected changes in the financial statements.
- In comparison to Scenario 1B, there are no changes to the assumptions regarding the application of the DRM model at the beginning of the DRM assessment period (ie as at 1<sup>st</sup> January 20X2) and there are no changes to the entity's risk mitigation intention either.
- Therefore the RMI and the BBs are exactly the same as they were in Scenario 1B (ie page 33 to 37 are the same as page 22 to 26).
- However, in this scenario, there is an unexpected change to the repayment profile of the mortgage (financial asset) which happens during the second period (ie between 1<sup>st</sup> January 20X2 and 31<sup>st</sup> December 20X2). This affects the recognition and measurement at the end of the DRM assessment period (ie as at 31<sup>st</sup> December 20X2).



# Determining CNOP

### Current net open risk position

On 1<sup>st</sup> January 20X2, the entity designates all the financial assets and financial liabilities in its CNOP based on the expectations as at that time (ie there were no unexpected changes at that time).

The entity also considers the reinvestment of existing financial assets and refinancing of existing financial liabilities after their expected maturity dates as floating rate exposures.

The entity’s total repricing gap is illustrated as per the table to the right.

	20X2 CU	20X3 CU	20X4 CU	20X5 CU	20X6 CU
<b>Fixed exposures</b>					
Financial Asset	1,000	1,000	1,000	1,000	
<b>Total Fixed</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	
<b>Floating exposures</b>					
Financial liability	(1,000)	(1,000)	(1,000)	(1,000)	
Reinvestment of financial asset					1,000
Refinancing of financial liability					(1,000)
<b>Total Floating</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>0</b>

**No changes** in the CNOP at the beginning of the period – same positions as scenario 1B (page 22)

# Designated Derivatives (DD)

## Designated Derivatives

On 1<sup>st</sup> January 20X2, the entity traded an additional vanilla interest rate swap (see (b) below) in order to mitigate 80% of the repricing risk:

- a) a 5-year pay fixed receive floating IR swap with notional of CU1,000, traded on 1<sup>st</sup> January 20X1 (DD Swap 1)
- b) a 4-year receive fixed pay floating IR swap with notional of CU200, traded on 1<sup>st</sup> January 20X2 (DD Swap 2)

	20X2 CU	20X3 CU	20X4 CU	20X5 CU	20X6 CU
Fixed exposures					
DD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	
DD Swap 2	200	200	200	200	
<b>Total Fixed</b>	<b>(800)</b>	<b>(800)</b>	<b>(800)</b>	<b>(800)</b>	
Floating exposures					
DD Swap 1	1,000	1,000	1,000	1,000	
DD Swap 2	(200)	(200)	(200)	(200)	
<b>Total Floating</b>	<b>800</b>	<b>800</b>	<b>800</b>	<b>800</b>	

**No changes** in the designated derivatives – same positions as scenario 1B (page 23)

# Designating RMI

**No changes** in the RMI – same as scenario 1B (page 24)

## Risk mitigation intention

On 1<sup>st</sup> January 20X2, the entity designates the RMI for the next period (from 1<sup>st</sup> January 20X2 to 31<sup>st</sup> December 20X2). Once the RMI for the period is designated, it cannot be changed retrospectively.

The RMI is based on the available risk to mitigate in each time period as calculated for the CNOP, as well as the extent of risk being transferred out based on the DDs.

If there was a breach of the prospective assessments due to entity over mitigating its risk, adjustments to the RMI would be necessary (See Scenario 4).

### As at 1 January 20X2

<u>CNOP</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,000	1,000	
Floating exposures	(1,000)	(1,000)	(1,000)	(1,000)	0
<u>Designated Derivative</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	(800)	(800)	(800)	(800)	
Floating exposures	800	800	800	800	

Determine the RMI based on CNOP and DDs



<u>Risk Mitigation Intention</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	800	800	800	800	0
Floating exposures	(800)	(800)	(800)	(800)	0
Management Priority	ΔNII	ΔNII	ΔNII	ΔNII	ΔNII
Prospective assessment	Pass	Pass	Pass	Pass	Pass

# Construction of the benchmark derivatives

## Benchmark Derivatives (BDs)


On 1<sup>st</sup> January 20X2 two more additional vanilla interest rate swaps (see (a) and (b) below) will be required as a BD to represent RMI.

(a) a 5-year receive fixed pay floating IR swap with notional of CU1,000, which has already been constructed (BD Swap 1)

(b) a 4-year pay fixed receive floating IR swap with notional of CU200, which is constructed as at 1<sup>st</sup> January 20X2 (BD Swap 2)

The aggregation of the two benchmark derivatives are used as documentation of the RMI for this period; and subsequently for measurement purposes.

<u>Risk Mitigation Intention</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	800	800	800	800	
Floating exposures	(800)	(800)	(800)	(800)	


Construct the BDs based on RMI

<u>Benchmark Derivatives</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
BD Swap 1	1,000	1,000	1,000	1,000	
BD Swap 2	(200)	(200)	(200)	(200)	
<b>Total fixed</b>	800	800	800	800	
<b>Floating exposures</b>					
BD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	
BD Swap 2	200	200	200	200	
<b>Total floating</b>	(800)	(800)	(800)	(800)	

**No changes** in the initial construction of BDs – same as scenario 1B (page 25)

# Summary of BDs and DDs

- In summary, the entity would have the following designated and benchmark derivatives.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the 'lower-of' test).
- In this scenario, the BDs are exactly the equal opposite of the DDs.

	Description	Notional	On-market rate	Start Date	End Date
<b><u>DD Swap 1</u></b>					
Pay fixed	5 yrs fixed	(1,000)	4.38%	1 Jan 20X1	31 Dec 20X5
Receive floating	5 yrs floating	1,000	12m BMIR		
<b><u>DD Swap 2</u></b>					
Receive fixed	4 yrs fixed	200	5.29%	1 Jan 20X2	31 Dec 20X5
Pay floating	4 yrs floating	(200)	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>BD Swap 1</u></b>					
Receive fixed	5 yrs fixed	1,000	4.38%	1 Jan 20X1	31 Dec 20X5
Pay floating	5 yrs floating	(1,000)	12m BMIR		
<b><u>BD Swap 2</u></b>					
Pay fixed	4 yrs fixed	(200)	5.29%	1 Jan 20X2	31 Dec 20X5
Receive floating	4 yrs floating	200	12m BMIR		

These BDs and DDs are exactly the same as Scenario 1B (page 26)

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## Scenario 1C – unexpected change to the assumptions

- At 31<sup>st</sup> December 20X2, the entity's expectation regarding the repayment profile of the financial asset has changed:
  - Original expectation: The financial asset will be repaid on 31<sup>st</sup> December 20X5 in full (CU1,000) and all proceeds will be reinvested on 1<sup>st</sup> January 20X6 at the prevailing market rate.
  - Revised expectation: The financial asset will be partially repaid (CU500) on 31<sup>st</sup> December 20X4 (earlier than previously expected), and the proceeds will be reinvested on 1<sup>st</sup> January 20X5 at the prevailing market rate; the remaining amount (CU500) is still expected to be repaid on 31<sup>st</sup> December 20X5 and reinvested on 1<sup>st</sup> January 20X6 at the prevailing market rate.
- This change was not expected by the entity when it determined the RMI at the beginning the second period (ie as at 1<sup>st</sup> January 20X2).

# Updated CNOP as at 31<sup>st</sup> December 20X2

## Updated CNOP

On 31<sup>st</sup> December 20X2, the entity re-assessed its CNOP based on the latest expectations as at that time, which would include the change in the repayment profile of the financial asset.

The entity excludes any new financing and/or investing activity that happened during the DRM assessment period ending 31<sup>st</sup> December 20X2 for the purposes of retrospective assessment.

The entity’s total (updated) repricing gap is illustrated as per the table to the right.

	20X3 CU	20X4 CU	20X5 CU	20X6 CU
<b>Fixed exposures</b>				
Financial Asset	1,000	1,000	500	
<b>Total Fixed</b>	<b>1,000</b>	<b>1,000</b>	<b>500</b>	
<b>Floating exposures</b>				
Financial liability	(1,000)	(1,000)	(1,000)	
Reinvestment of financial asset			500	1,000
Refinancing of financial liability				(1,000)
<b>Total Floating</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(500)</b>	<b>0</b>

# Retrospective assessment as at 31<sup>st</sup> December 20X2

## Retrospective assessments

On 31<sup>st</sup> December 20X2, the entity applies the retrospective assessment based on the updated CNOP to assess the impact of the unexpected changes.


In this example, the entity breaches the retrospective assessment by a notional of CU300 at repricing period 20X5 (over mitigating its risk).

### As at 31 Decmeber 20X2

<u>Updated CNOP</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,000	500	
Floating exposures	(1,000)	(1,000)	(1,000)	(500)	

<u>Risk Mitigation Intention</u>	20X2	20X3	20X4	20X5	20X6
	CU	CU	CU	CU	CU
Fixed exposures	800	800	800	800	
Floating exposures	(800)	(800)	(800)	(800)	

<u>Retrospective assessment</u>	20X2	20X3	20X4	20X5	20X6
	Pass	Pass	Pass	Fail	Pass

<u>Effect of unexpected changes</u>	20X2	20X3	20X4	20X5	20X6
	0	0	0	(300)	0



# Calculate the effect of unexpected changes

### Unexpected changes

The effect of the unexpected changes on the RMI must be captured to ensure DDs are not mitigating risk that doesn't exist. This could be done using any method. For the purposes of this example, we've assumed the entity decided to construct two additional BDs based on the market rates as at 1<sup>st</sup> January 20X2 (beginning of the period), to represent the effect of unexpected changes:

- (a) a 4-year pay fixed receive floating IR swap with notional of CU300, maturing on 31<sup>st</sup> December 20X5 (BD Swap 3)
- (b) a 3-year receive fixed pay floating IR swap with notional of CU200, maturing on 31<sup>st</sup> December 20X4 (BD Swap 4)

	20X2 CU	20X3 CU	20X4 CU	20X5 CU	20X5 CU
<b>Retrospective assessment</b>	Pass	Pass	Pass	Fail	Pass
<b>Effect of unexpected changes</b>	0	0	0	(300)	0



### Additional Benchmark Derivative

Fixed exposures					
BD Swap 3	(300)	(300)	(300)	(300)	
BD Swap 4	300	300	300		
<b>Total Fixed</b>	0	0	0	(300)	0

Floating exposures					
BD Swap 3	300	300	300	300	
BD Swap 4	(300)	(300)	(300)		
<b>Total Floating</b>	0	0	0	300	0

# Summary of BDs and DDs – updated

- In summary, the entity would have the following designated and benchmark derivatives once the effect of unexpected changes are included.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the ‘lower-of’ test).

<u>DD Swap 1</u>	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	5 yrs fixed	(1,000)	4.38%	1 Jan 20X1	31 Dec 20X5
Receive floating	5 yrs floating	1,000	12m BMIR		

<u>DD Swap 2</u>	Description	Notional	On-market rate	Start Date	End Date
Receive fixed	4 yrs fixed	200	5.29%	1 Jan 20X2	31 Dec 20X5
Pay floating	4 yrs floating	(200)	12m BMIR		

<u>BD Swap 1</u>	Description	Notional	On-market rate	Start Date	End Date
Receive fixed	5 yrs fixed	1,000	4.38%	1 Jan 20X1	31 Dec 20X5
Pay floating	5 yrs floating	(1,000)	12m BMIR		

<u>BD Swap 2</u>	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	4 yrs fixed	(200)	5.29%	1 Jan 20X2	31 Dec 20X5
Receive floating	4 yrs floating	200	12m BMIR		

<u>BD Swap 3</u>	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	4 yrs fixed	(300)	5.29%	1 Jan 20X2	31 Dec 20X5
Receive floating	4 yrs floating	300	12m BMIR		

<u>BD Swap 4</u>	Description	Notional	On-market rate	Start Date	End Date
Receive fixed	3 yrs fixed	300	5.19%	1 Jan 20X2	31 Dec 20X4
Pay floating	3 yrs floating	(300)	12m BMIR		

BD Swap 3 and 4 are constructed to represent the effect of unexpected changes

# Valuation of designated derivatives

- The designated derivatives are valued on both 1<sup>st</sup> January 20X2 and 31<sup>st</sup> December 20X2.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue. There is no change from Scenario 1B for DD Swap 1 and DD Swap 2.
- The valuation of BBs 1 and 2 will be equal and opposite of DDs 1 and 2.

as at 1st Jan 20X2 - beginning of the period 2

DD Swap 1 Valuation					
Years	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)	
Receive Floating	50.00	52.00	54.00	56.00	
Derivative Net C/F	6.18	8.18	10.18	12.18	
DCF	0.95	0.91	0.86	0.81	Total FV
Derivative Fair Value	5.88	7.40	8.74	9.90	31.93

as at 31st Dec 20X2 / 1st Jan 20X3 - end of the period 2

DD Swap 1 Valuation				
Years	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	
Receive Floating	20.00	22.00	24.00	
Derivative Net C/F	(23.82)	(21.82)	(19.82)	
DCF	0.98	0.96	0.94	Total FV
Derivative Fair Value	(23.36)	(20.94)	(18.57)	(62.86)

DD Swap 2 Valuation

Years	2	3	4	5	
Receive Fixed	10.57	10.57	10.57	10.57	
Pay Floating	(10.00)	(10.40)	(10.80)	(11.20)	
Derivative Net C/F	0.56	0.17	(0.23)	(0.63)	
DCF	0.95	0.91	0.86	0.81	Total FV
Derivative Fair Value	0.55	0.16	(0.19)	(0.51)	0.00

DD Swap 2 Valuation

Years	3	4	5	
Receive Fixed	10.57	10.57	10.57	
Pay Floating	(4.00)	(4.40)	(4.80)	
Derivative Net C/F	6.57	6.17	5.77	
DCF	0.98	0.96	0.94	Total FV
Derivative Fair Value	6.44	5.92	5.41	17.78

# Valuation of additional benchmark derivatives

- The valuation of benchmark derivatives 3 and 4 are summarised below:

as at 1st Jan 20X2 - beginning of the period 2

<b>BD Swap 3 Valuation</b>					
Years	2	3	4	5	
Pay Fixed	(15.86)	(15.86)	(15.86)	(15.86)	
Receive Floating	15.00	15.60	16.20	16.80	
Derivative Net C/F	(0.86)	(0.26)	0.34	0.94	
DCF	0.95	0.91	0.86	0.81	Total FV
Derivative Fair Value	(0.82)	(0.24)	0.29	0.76	0.00

<b>BD Swap 4 Valuation</b>					
Years	2	3	4	5	
Receive Fixed	15.58	15.58	15.58		
Pay Floating	(15.00)	(15.60)	(16.20)		
Derivative Net C/F	0.58	(0.02)	(0.62)		
DCF	0.95	0.91	0.86		Total FV
Derivative Fair Value	0.55	(0.02)	(0.53)		0.00

as at 31st Dec 20X2 / 1st Jan 20X3 - end of the period 2

<b>BD Swap 3 Valuation</b>				
Years	3	4	5	
Pay Fixed	(15.86)	(15.86)	(15.86)	
Receive Floating	6.00	6.60	7.20	
Derivative Net C/F	(9.86)	(9.26)	(8.66)	
DCF	0.98	0.96	0.94	Total FV
Derivative Fair Value	(9.67)	(8.88)	(8.11)	(26.66)

<b>BD Swap 4 Valuation</b>				
Years	3	4	5	
Receive Fixed	15.58	15.58		
Pay Floating	(6.00)	(6.60)		
Derivative Net C/F	9.58	8.98		
DCF	0.98	0.96		Total FV
Derivative Fair Value	9.39	8.61		18.01

# Summary of valuations (BD and DD)

- Below is a summary of the valuation for each derivative and the combined total:

**End of period valuation**

	31 December 20X1	31 December 20X2
<b>Designated Derivative</b>	CU	CU
Clean fair value	31.93	(45.08)
Life to date (LTD) cash settled	(3.82)	2.92
Total LTD fair value changes	28.11	(42.16)
<b>Benchmark Derivative</b>		
Clean fair value	(31.93)	36.43
LTD cash settled	3.82	(3.20)
Total LTD fair value changes	(28.11)	33.23

CU(62.86) + CU17.78 =  
CU(45.08) total PV

CU(3.82) of Period 1 cash settled +  
CU6.18+CU0.56 of Period 2 cash settled  
= CU2.92 LTD cash settled

CU62.86 + CU(17.78) +  
CU(26.66)+ CU18.01 =  
CU36.43 total PV

CU3.82 of Period 1 cash settled +  
CU(6.18)+CU(0.56)+CU(0.86)+CU0.58 of  
Period 2 cash settled = CU(3.20) LTD  
cash settled

## Calculation of the DRM adjustment

DRM adjustment is recognised in the statement of financial position, as the lower of (in absolute amounts):

- (i) the cumulative gain or loss on the designated derivatives from the inception of the DRM model; and
- (ii) the cumulative change in the fair value of the risk mitigation intention attributable to repricing risk from inception of the DRM model. This would be calculated using the benchmark derivatives as a proxy.

So in this example, (i) **CU(42.16)** vs (ii) CU33.23

Once recognised, the realised benefit from the DRM will be recognised in the net interest income in statement of profit or loss over time, based on the lower of the cumulative coupon accrual profile between the benchmark derivative and the designated derivative, which means CU2.92 life-to-date.

***In this example, although the BDs' cumulative fair value change is lower at CU33.23, the total cumulative accrual from the DDs is lower at CU2.92.***

# Accounting entries for the period

Accounting entries for the year ending 20X2		
Underlying	Dr Financial asset 43.82 Cr Interest income 43.82 <i>(Being the recognition of interest income accrued)</i>	
	Dr Interest expense 50.00 Cr Financial liability 50.00 <i>(Being the recognition of interest expense accrued)</i>	
	Dr Financial liability 50.00 Cr Financial asset 43.82 Cr Cash 6.18 <i>(Being the cash settlement of the interest income and expense accrued) (Net interest expense recognised = 6.18)</i>	
	Designated derivative	Dr Net trading income 77.01 Cr Net trading income 6.74 Cr Designated derivative 70.27 <i>(Being the recognition of the fair value movement on the derivative, including the accrued element. Total loss in P&amp;L is (77.01-6.74) = 70.27)</i>
		Dr Cash 6.74 Cr Designated derivative 6.74 <i>(Being the cash settlement of the accrual)</i>
	DRM adjustment	Dr DRM adjustment 61.34 Cr Net trading income 61.34 <i>(Being the movement in the DRM adjustment for the period)</i>
Dr DRM adjustment 6.74 Cr Net interest income 6.74 <i>(Being the realisation of the DRM benefit - Total DRM adjustment as at 31 December 20X2 is 36.15 as this is the future NII available to the entity)</i>		

Underlying items are the same as Scenario 1B

Snapshot - 31 December 20X2 with unexpected change			
	B/fwd	Net Δ	C/fwd
Net interest income	0.00	(0.56)	(0.56)
Net trading income	0.00	8.93	8.93
Derivative	31.93	(77.01)	(45.08)
DRM adjustment	(31.93)	68.08	36.15
Cash	0.00	0.56	0.56

The entity:

- has managed to mitigate 100% of its exposure to interest rate risk in the first year and 80% of its exposure in the second year;
- has a DRM adjustment of CU36.15 in its statement of financial position, to be utilised and recognised in the NII in the statement of profit or loss in future periods (the difference of CU0.28 between the clean FV of BDs of CU36.43 and this amount is due to difference in accrual profiles of BDs and DDs);
- has interest income of CU0.56 at the end of the period, due to CU200 of unmitigated risk in the second period; and
- has a net trading loss of CU8.93 due to unexpected changes resulting in misalignment.

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Complex scenarios

CNOP comprised of multiple  
financial assets and financial  
liabilities



# Introduction and RMS

## Introduction

For the complex scenarios, the examples are for the first period only, with a focus on demonstrating how an entity would apply the DRM model in different scenarios.

Three scenarios are considered in this section of the paper, covering situations such as:

- inclusion of core demand deposits;
- notional misalignment and the use of equity as a funding source;
- partial risk mitigation; and
- mitigating risks in adjacent repricing periods.

## Risk Management Strategy (RMS)

Key components documented in the entity's RMS:

- Manages its entity-level interest rate risk for a 5-year time horizon, based on exposure in  $\Delta NII$  for the first two years and  $\Delta EVE$  for the remaining three years
- Managed risk is the 12 month benchmark rate
- Uses notional repricing gap as the key risk metric, divided into 5 yearly repricing periods
- Sets the risk limit as a notional repricing gap of -CU500 to +CU500 in each of the repricing periods (target profile)
- Manages the changes in risks annually (DRM assessment period)
- Includes expected cash flows based on internal models.

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## Scenario 2

Designation of multiple financial  
assets and financial liabilities  
(including core demand deposit)

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## Scenario 2 - Assumptions

- In this example, it is assumed that as at 1<sup>st</sup> January 20X1 the entity has:
  - 1) a five-year 4.382% fixed rate mortgage with a notional of CU1,000 (FA1);
  - 2) a three-year 4.194% fixed rate loan with a notional of CU500 (FA2);
  - 3) a two-year term floating rate asset at 12-month benchmark rate with a notional of CU200 (FA3);
  - 4) a five-year term floating rate liability at 12-month benchmark rate with a notional of CU1,000 (FL1);
  - 5) a four-year term floating rate liability at 12-month benchmark rate with a notional of CU500 (FL2);
  - 6) non-interest bearing core demand deposits with a notional of CU200, of which CU100 is expected to be rate insensitive for two years, and the other CU100 is expected to be rate insensitive for one year (FL3).
- The entity's risk management strategy (RMS) are the same for all examples in scenario 2 to 4, which can be found on page 49. Consistent with its RMS, in Scenario 2 the entity intends to fully mitigate its interest rate risk exposures, and has traded derivatives with external counterparties accordingly.
- The entity is expected to reinvest its existing financial assets and refinance its existing financial liabilities after their expected maturity dates at the prevailing market rate at the maturity date.
- There is no unexpected change to the CNOP during the period.
- The yield curve assumptions are listed on page 8, which are the same as those described under Scenario 1.

# Determining CNOP

### Current net open risk position

On 1<sup>st</sup> January 20X1, the entity designates all the financial assets and financial liabilities in its CNOP based on the expected maturities.

The entity also considers the reinvestment of existing financial assets and refinancing of existing financial liabilities after their expected maturity dates as floating rate exposures.

The entity's total repricing gap is illustrated as per the table to the right.

### CNOP as at 1 January 20X1

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
Financial asset FA1	1,000	1,000	1,000	1,000	1,000
Financial asset FA2	500	500	500		
Financial liability FL3	(200)	(100)			
<b>Total fixed rate exposures</b>	<b>1,300</b>	<b>1,400</b>	<b>1,500</b>	<b>1,000</b>	<b>1,000</b>
<b>Floating exposures</b>					
Financial liability FL1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Financial asset FA3	200	200			
Financial liability FL2	(500)	(500)	(500)	(500)	
Reinvestment FA2				500	500
Reinvestment FA3			200	200	200
Refinancing FL2					(500)
Refinancing FL3		(100)	(200)	(200)	(200)
<b>Total floating rate exposures</b>	<b>(1,300)</b>	<b>(1,400)</b>	<b>(1,500)</b>	<b>(1,000)</b>	<b>(1,000)</b>

# Designated Derivatives (DD)

## Designated Derivatives

On 1<sup>st</sup> January 20X1, the entity traded four vanilla interest rate swaps in order to fully mitigate the repricing risk:

- a) a 5-year pay fixed receive floating IR swap with notional of CU1,000 (DD Swap 1)
- b) a 3-year pay fixed receive floating IR swap with notional of CU500 (DD Swap 2)
- c) a 2-year receive fixed pay floating IR swap with notional of CU100 (DD Swap 3)
- d) a 1-year receive fixed pay floating IR swap with notional of CU100 (DD Swap 4)

## Designated Derivative as at 1 January 20X1

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures					
DD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
DD Swap 2	(500)	(500)	(500)		
DD Swap 3	100	100			
DD Swap 4	100				
<b>Total fixed rate exposures</b>	<b>(1,300)</b>	<b>(1,400)</b>	<b>(1,500)</b>	<b>(1,000)</b>	<b>(1,000)</b>
Floating exposures					
DD Swap 1	1,000	1,000	1,000	1,000	1,000
DD Swap 2	500	500	500		
DD Swap 3	(100)	(100)			
DD Swap 4	(100)				
<b>Total floating rate exposures</b>	<b>1,300</b>	<b>1,400</b>	<b>1,500</b>	<b>1,000</b>	<b>1,000</b>

# Designating RMI

### Risk mitigation intention

On 1<sup>st</sup> January 20X1, the entity designates the RMI for the period (from 1<sup>st</sup> January 20X1 to 31<sup>st</sup> December 20X1). Once the RMI for the period is designated, it cannot be changed retrospectively.

The RMI is based on the available risk to mitigate in each time period as calculated for the CNOP, as well as the extent of risk being transferred out based on the DD.

If there was a breach of the prospective assessments due to entity over mitigating its risk, adjustments to the RMI would be necessary (See Scenario 4).

**As at 1 January 20X1**

<u>CNOP</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,300	1,400	1,500	1,000	1,000
Floating exposures	(1,300)	(1,400)	(1,500)	(1,000)	(1,000)
<u>Designated Derivative</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	(1,300)	(1,400)	(1,500)	(1,000)	(1,000)
Floating exposures	1,300	1,400	1,500	1,000	1,000



<u>Risk Mitigation Intention</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,300	1,400	1,500	1,000	1,000
Floating exposures	(1,300)	(1,400)	(1,500)	(1,000)	(1,000)
Management Priority	ΔNII	ΔNII	ΔEVE	ΔEVE	ΔEVE
Prospective assessment	Pass	Pass	Pass	Pass	Pass


# Construction of Benchmark Derivatives (BD)

## Benchmark Derivatives

On 1<sup>st</sup> January 20X1, four vanilla IR swaps are required as BDs to represent RMI:

- a) a 5-year receive fixed pay floating IR swap with notional of CU1,000 (BD Swap 1)
- b) a 3-year receive fixed pay floating IR swap with notional of CU500 (BD Swap 2)
- c) a 2-year pay fixed receive floating IR swap with notional of CU100 (BD Swap 3)
- d) a 1-year pay fixed receive floating IR swap with notional of CU100 (BD Swap 4)

These benchmark derivatives are used as documentation of the RMI for the period; and subsequently for measurement purposes.

<u>Risk Mitigation Intention</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,300	1,400	1,500	1,000	1,000
Floating exposures	(1,300)	(1,400)	(1,500)	(1,000)	(1,000)
 Construct the BD based on RMI					
<u>Benchmark Derivative</u>					
Fixed exposures					
BD Swap 1	1,000	1,000	1,000	1,000	1,000
BD Swap 2	500	500	500		
BD Swap 3	(100)	(100)			
BD Swap 4	(100)				
Total Fixed	1,300	1,400	1,500	1,000	1,000
Floating exposures					
BD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
BD Swap 2	(500)	(500)	(500)		
BD Swap 3	100	100			
BD Swap 4	100				
Total Floating	(1,300)	(1,400)	(1,500)	(1,000)	(1,000)

# Summary of BDs and DDs

- In summary, the entity would have the following designated derivatives and benchmark derivatives.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the 'lower-of' test).
- In this scenario, the BDs are exactly the equal opposite of the DDs.

<u>DD Swap 1</u>						<u>BD Swap 1</u>					
Description	Notional	On-market rate	Start Date	End Date		Description	Notional	On-market rate	Start Date	End Date	
Pay fixed	5 yrs fixed	(1,000)	4.38%	1 Jan 20X1	31 Dec 20X5	Receive fixed	5 yrs fixed	1,000	4.38%	1 Jan 20X1	31 Dec 20X5
Receive floating	5 yrs floating	1,000	12m BMIR			Pay floating	5 yrs floating	(1,000)	12m BMIR		
<u>DD Swap 2</u>						<u>BD Swap 2</u>					
Description	Notional	On-market rate	Start Date	End Date		Description	Notional	On-market rate	Start Date	End Date	
Pay fixed	3 yrs fixed	(500)	4.19%	1 Jan 20X1	31 Dec 20X3	Receive fixed	3 yrs fixed	500	4.19%	1 Jan 20X1	31 Dec 20X3
Receive floating	3 yrs floating	500	12m BMIR			Pay floating	3 yrs floating	(500)	12m BMIR		
<u>DD Swap 3</u>						<u>BD Swap 3</u>					
Nature	Notional	On-market rate	Start Date	End Date		Description	Notional	On-market rate	Start Date	End Date	
Receive fixed	2 yrs fixed	100	4.10%	1 Jan 20X1	31 Dec 20X2	Pay fixed	2 yrs fixed	(100)	4.10%	1 Jan 20X1	31 Dec 20X2
Pay floating	2 yrs floating	(100)	12m BMIR			Receive floating	2 yrs floating	100	12m BMIR		
<u>DD Swap 4</u>						<u>BD Swap 4</u>					
Nature	Notional	On-market rate	Start Date	End Date		Description	Notional	On-market rate	Start Date	End Date	
Receive fixed	1 yr fixed	100	4.00%	1 Jan 20X1	31 Dec 20X1	Pay fixed	1 yr fixed	(100)	4.00%	1 Jan 20X1	31 Dec 20X1
Pay floating	1 yr floating	(100)	12m BMIR			Receive floating	1 yr floating	100	12m BMIR		



# Valuations of designated derivatives

- Each of the four designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for DD Swap 1 and DD Swap 2.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

### DD Swap 1 Valuation

Years	1	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)	(43.82)	
Receive Floating	40.00	42.00	44.00	46.00	48.00	
Derivative Net C/F	(3.82)	(1.82)	0.18	2.18	4.18	
DCF	0.96	0.92	0.88	0.85	0.81	Total FV
Derivative Fair Value	(3.68)	(1.68)	0.16	1.84	3.37	0.00

### DD Swap 2 Valuation

Years	1	2	3	4	5	
Pay Fixed	(20.97)	(20.97)	(20.97)			
Receive Floating	20.00	21.00	22.00			
Derivative Net C/F	(0.97)	0.03	1.03			
DCF	0.96	0.92	0.88			Total FV
Derivative Fair Value	(0.93)	0.03	0.91			0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

### DD Swap 1 Valuation

Years	1	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)		
Receive Floating	50.00	52.00	54.00	56.00		
Derivative Net C/F	6.18	8.18	10.18	12.18		
DCF	0.95	0.91	0.86	0.81		Total FV
Derivative Fair Value	5.88	7.40	8.74	9.90		31.93

### DD Swap 2 Valuation

Years	1	2	3	4	5	
Pay Fixed	(20.97)	(20.97)				
Receive Floating	25.00	26.00				
Derivative Net C/F	4.03	5.03				
DCF	0.95	0.91				Total FV
Derivative Fair Value	3.84	4.55				8.39

# Valuations of designated derivatives

- Each of the four designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for DD Swap 3 and DD Swap 4.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

<b>DD Swap 3 Valuation</b>						
	Years	1	2	3	4	5
Receive Fixed		4.10	4.10			
Pay Floating		(4.00)	(4.20)			
Derivative Net C/F		0.10	(0.10)			
DCF		0.96	0.92			Total FV
Derivative Fair Value		0.09	(0.09)			0.00

<b>DD Swap 4 Valuation</b>						
	Years	1	2	3	4	5
Receive Fixed		4.00				
Pay Floating		(4.00)				
Derivative Net C/F		0.00				
DCF		0.96				Total FV
Derivative Fair Value		0.00				0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

<b>DD Swap 3 Valuation</b>						
	Years	1	2	3	4	5
Receive Fixed		4.10				
Pay Floating		(5.00)				
Derivative Net C/F		(0.90)				
DCF		0.95				Total FV
Derivative Fair Value		(0.86)				(0.86)

<b>DD Swap 4 Valuation</b>						
	Years	1	2	3	4	5
Receive Fixed						
Pay Floating						
Derivative Net C/F						
DCF						Total FV
Derivative Fair Value						0.00

# Summary of valuations (BDs and DDs)

- Each of the four designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below is a summary of the valuation for each derivative and the combined total.
- In this scenario, the BDs are exactly the equal opposite of the DDs.

## End of period valuation

	31 December 20X1				
<b>Designated Derivatives</b>	DD Swap 1	DD Swap 2	DD Swap 3	DD Swap 4	Total
Clean fair value	31.93	8.39	(0.86)	0.00	39.46
Life to date (LTD) Cash Settled	(3.82)	(0.97)	0.10	0.00	(4.70)
Total LTD fair value changes	28.10	7.42	(0.76)	0.00	34.76
<b>Benchmark Derivatives</b>	BD Swap 1	BD Swap 2	BD Swap 3	BD Swap 4	Total
Clean fair value	(31.93)	(8.39)	0.86	0.00	(39.46)
LTD Cash Settled	3.82	0.97	(0.10)	0.00	4.70
Total LTD fair value changes	(28.10)	(7.42)	0.76	0.00	(34.76)

This is the valuation (present value) of the **outstanding** or unrealised future cash flows of the swap at end of the period

This is the value of the **realised LTD accrual** (settled cash)

This is the value of the **total LTD gains** recognised in the P&L

## Calculation of the DRM adjustment

DRM adjustment is recognised in the statement of financial position, as the lower of (in absolute amounts):

- (i) the cumulative gain or loss on the designated derivatives from the inception of the DRM model; and
- (ii) the cumulative change in the fair value of the risk mitigation intention attributable to repricing risk from inception of the DRM model. This would be calculated using the benchmark derivatives as a proxy.

So in this example, (i) CU34.76 vs (ii) **CU(34.76)**

Once recognised, the realised benefit from the DRM will be recognised in the net interest income in statement of profit or loss over time, based on the lower of the coupon accrual profile between the benchmark derivative and the designated derivative, which means **CU(4.70)** in 20X1.

# Accounting entries for the period

Accounting entries for the year ending 20X1	
<b>Underlying items</b>	Dr Financial asset 72.80 Cr Interest income 72.80 <i>(Being the recognition of interest income accrued)</i>
	Dr Interest expense 60.00 Cr Financial liability 60.00 <i>(Being the recognition of interest expense accrued)</i>
	Dr Financial liability 60.00 Cr Financial asset 72.80 Dr Cash (net) 12.80 <i>(Being the cash settlement of the interest income and expense accrued) (Net interest income recognised = 12.80)</i>
	Dr Designated derivative 34.76 Dr Net trading income 4.70 Cr Net trading income 39.46 <i>(Being the recognition of the fair value movement on the derivative, including the accrued element. Total gain in P&amp;L is (39.46 - 4.70) =34.76)</i>
	Dr Designated derivative 4.70 Cr Cash 4.70 <i>(Being the cash settlement of the accrual)</i>
	Dr Net trading income 34.76 Cr DRM adjustment 34.76 <i>(Being the initial recognition of the DRM adjustment)</i>
<b>DRM adjustment</b>	Dr Net interest income 4.70 Cr DRM adjustment - realised benefit 4.70 <i>(Being the realisation of the DRM benefit - Total DRM adjustment as at 31 December 20X1 is 39.46 as this is the future NII available to the entity)</i>

For the period, the interest income and expense are driven by:

CU1000 fixed asset @ 4.38%	CU200 liability @ 0% being CDD
CU500 fixed asset @ 4.19%	CU1,000 floating liability @ 4%
CU200 floating asset @ 4%	CU500 floating liability @ 4%

**Snapshot - 31 December 20X1**

	<u>B/fwd</u>	<u>Net Δ</u>	<u>C/fwd</u>	Notes
Net interest income	0.00	(8.10)	(8.10)	A
Net trading income	0.00	0.00	0.00	
Derivative	0.00	39.46	39.46	B
DRM adjustment	0.00	(39.46)	(39.46)	B
Cash	0.00	8.10	8.10	A

Notes:

- A. CU200 notional of free funding from the core demand deposit resulted in net interest income of CU8.10cr. CU100 of notional was modelled as 2-year 4.10 % fixed and the other CU100 of notional was modelled as 1-year 4.00% fixed.
- B. The fair value changes in the designated derivatives are fully offset by the DRM adjustment, with no misalignment P&L for the period.

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## Scenario 3

Designation of financial assets and financial liabilities with misaligned notionals

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## Scenario 3 - Assumptions

- In this example, it is assumed that as at 1<sup>st</sup> January 20X1 the entity has:
  - 1) a five-year 4.382% fixed rate mortgage with a notional of CU1,000 (FA1);
  - 2) a three-year 4.194% fixed rate loan with a notional of CU300 (FA2);
  - 3) a five-year term floating rate liability at 12-month benchmark rate with a notional of CU1,000 (FL1);
- The entity has more financial assets (CU1,300) than financial liabilities (CU1,000) designated in the DRM model, which implies the gap of CU300 might be funded by other sources of funding that are ineligible for the DRM model (such as equity).
- The entity's risk management strategy (RMS) are the same for all examples in scenario 2 to 4, which can be found on page 49. Consistent with its RMS, in Scenario 3 the entity intends to fully mitigate its interest rate risk exposures, and has traded derivatives with external counterparties accordingly.
- The entity is expected to reinvest its existing financial assets and refinance its existing financial liabilities after their expected maturity dates at the prevailing market rate at the maturity date.
- There is no unexpected change to the CNOP during the period.
- The yield curve assumptions are listed on page 8, which are the same as those described under Scenario 1 & 2.

# Determining CNOP

## Current net open risk position

On 1<sup>st</sup> January 20X1, the entity designates all the financial assets and financial liabilities in its CNOP based on the expected maturities.

The entity also considers the reinvestment of existing financial assets and refinancing of existing financial liabilities after their expected maturity dates as floating rate exposures.

The entity's total repricing gap is illustrated as per the table to the right.

### CNOP as at 1 January 20X1

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
Financial asset FA1	1,000	1,000	1,000	1,000	1,000
Financial asset FA2	300	300	300		
<b>Total fixed rate exposures</b>	<b>1,300</b>	<b>1,300</b>	<b>1,300</b>	<b>1,000</b>	<b>1,000</b>
<b>Floating exposures</b>					
Financial liability FL1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Reinvestment FA2				300	300
<b>Total floating rate exposures</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(700)</b>	<b>(700)</b>
<b>Notional</b>					
FA1	1,000				
FA2	300				
<b>Total Asset</b>	<b>1,300</b>				
FL1	(1,000)				
<b>Total Liability</b>	<b>(1,000)</b>				

The gap of CU300 between assets and liabilities could be due to equity funding



# Designated Derivatives (DD)

## Designated Derivatives

On 1<sup>st</sup> January 20X1, the entity traded three vanilla interest rate swaps in order to fully mitigate the repricing risk, based on its risk management strategy<sup>1</sup>:

- a) a 5-year pay fixed receive floating IR swap with notional of CU1,000 (DD Swap 1)
- b) a 3-year pay fixed receive floating IR swap with notional of CU300 (DD Swap 2)
- c) a 2-year receive fixed pay floating IR swap with notional of CU300 (DD Swap 3)

### Designated Derivative as at 1 January 20X1

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
DD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
DD Swap 2	(300)	(300)	(300)		
DD Swap 3	300	300			
<b>Total fixed rate exposures</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,300)</b>	<b>(1,000)</b>	<b>(1,000)</b>
<b>Floating exposures</b>					
DD Swap 1	1,000	1,000	1,000	1,000	1,000
DD Swap 2	300	300	300		
DD Swap 3	(300)	(300)			
<b>Total floating rate exposures</b>	<b>1,000</b>	<b>1,000</b>	<b>1,300</b>	<b>1,000</b>	<b>1,000</b>

<sup>1</sup> Entity manages its entity-level interest rate risk for a 5-year time horizon, based on exposure in ΔNII for the first two years and ΔEVE for the remaining three years.

# Designating RMI

### Risk mitigation intention

When designating the RMI, the entity considers the available risk to mitigate in each time period (the CNOP) based on its management priority defined in the RMS (ie  $\Delta NII$  or  $\Delta EVE$ ), as well as the extent of risk being transferred out based on the DD.

In this case, the entity manages  $\Delta NII$  for the first two years and  $\Delta EVE$  for the remaining three years. Accordingly, the available risk to mitigate is based on floating exposures for the first two years and fixed rate exposures for the remaining three years (as highlighted in yellow).

**As at 1 January 20X1**

<u>CNOP</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,300	1,300	1,300	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,000)	(700)	(700)
<u>Designated Derivative</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	(1,000)	(1,000)	(1,300)	(1,000)	(1,000)
Floating exposures	1,000	1,000	1,300	1,000	1,000

Determine the RMI based on CNOP and DD



<u>Risk Mitigation Intention</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,300	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,300)	(1,000)	(1,000)
Management Priority	$\Delta NII$	$\Delta NII$	$\Delta EVE$	$\Delta EVE$	$\Delta EVE$
Prospective assessment	Pass	Pass	Pass	Pass	Pass


# Construction of Benchmark Derivatives (BD)

## Benchmark Derivatives

On 1<sup>st</sup> January 20X1, three vanilla interest rate swaps are required as BDs to represent RMI:

- a) a 5-year receive fixed pay floating IR swap with notional of CU1,000 (BD Swap 1)
- b) a 3-year receive fixed pay floating IR swap with notional of CU300 (BD Swap 2)
- c) a 2-year pay fixed receive floating IR swap with notional of CU300 (BD Swap 3)

These benchmark derivatives are used as documentation of the RMI for the period; and subsequently for measurement purposes.

Risk Mitigation Intention	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,300	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,300)	(1,000)	(1,000)
 Construct the BD based on RMI					
Benchmark Derivative					
Fixed exposures					
BD Swap 1	1,000	1,000	1,000	1,000	1,000
BD Swap 2	300	300	300		
BD Swap 3	(300)	(300)			
<b>Total Fixed</b>	<b>1,000</b>	<b>1,000</b>	<b>1,300</b>	<b>1,000</b>	<b>1,000</b>
Floating exposures					
BD Swap 1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
BD Swap 2	(300)	(300)	(300)		
BD Swap 3	300	300			
<b>Total Floating</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,300)</b>	<b>(1,000)</b>	<b>(1,000)</b>

# Summary of BDs and DDs

- In summary, the entity would have the following designated derivatives and benchmark derivatives.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the 'lower-of' test).
- In this scenario, the BDs are exactly the equal opposite of the DDs

	Description	Notional	On-market rate	Start Date	End Date
<b><u>DD Swap 1</u></b>					
Pay fixed	5 yrs fixed	(1,000)	4.38%	1 Jan 20X1	31 Dec 20X5
Receive floating	5 yrs floating	1,000	12m BMIR		
<b><u>DD Swap 2</u></b>					
	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	3 yrs fixed	(300)	4.19%	1 Jan 20X1	31 Dec 20X3
Receive floating	3 yrs floating	300	12m BMIR		
<b><u>DD Swap 3</u></b>					
	Nature	Notional	On-market rate	Start Date	End Date
Receive fixed	2 yrs fixed	300	4.10%	1 Jan 20X1	31 Dec 20X2
Pay floating	2 yrs floating	(300)	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>BD Swap 1</u></b>					
Receive fixed	5 yrs fixed	1,000	4.38%	1 Jan 20X1	31 Dec 20X5
Pay floating	5 yrs floating	(1,000)	12m BMIR		
<b><u>BD Swap 2</u></b>					
	Description	Notional	On-market rate	Start Date	End Date
Receive fixed	3 yrs fixed	300	4.19%	1 Jan 20X1	31 Dec 20X3
Pay floating	3 yrs floating	(300)	12m BMIR		
<b><u>BD Swap 3</u></b>					
	Description	Notional	On-market rate	Start Date	End Date
Pay fixed	2 yrs fixed	(300)	4.10%	1 Jan 20X1	31 Dec 20X2
Receive floating	2 yrs floating	300	12m BMIR		

# Valuations of designated derivatives

- Each of the three designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for DD Swap 1 and DD Swap 2.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

DD Swap 1 Valuation						
Years	1	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)	(43.82)	
Receive Floating	40.00	42.00	44.00	46.00	48.00	
Derivative Net C/F	(3.82)	(1.82)	0.18	2.18	4.18	
DCF	0.96	0.92	0.88	0.85	0.81	Total FV
Derivative Fair Value	(3.68)	(1.68)	0.16	1.84	3.37	0.00

DD Swap 2 Valuation						
Years	1	2	3	4	5	
Pay Fixed	(12.58)	(12.58)	(12.58)			
Receive Floating	12.00	12.60	13.20			
Derivative Net C/F	(0.58)	0.02	0.62			
DCF	0.96	0.92	0.88			Total FV
Derivative Fair Value	(0.56)	0.02	0.55			0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

DD Swap 1 Valuation						
Years	1	2	3	4	5	
Pay Fixed	(43.82)	(43.82)	(43.82)	(43.82)		
Receive Floating	50.00	52.00	54.00	56.00		
Derivative Net C/F	6.18	8.18	10.18	12.18		
DCF	0.95	0.91	0.86	0.81		Total FV
Derivative Fair Value	5.88	7.40	8.74	9.90		31.93

DD Swap 2 Valuation						
Years	1	2	3	4	5	
Pay Fixed	(12.58)	(12.58)				
Receive Floating	15.00	15.60				
Derivative Net C/F	2.42	3.02				
DCF	0.95	0.91				Total FV
Derivative Fair Value	2.30	2.73				5.03

# Valuations of designated derivatives

- Each of the three designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for DD Swap 3.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

DD Swap 3 Valuation						
	Years	1	2	3	4	5
Receive Fixed		12.29	12.29			
Pay Floating		(12.00)	(12.60)			
Derivative Net C/F		0.29	(0.31)			
DCF		0.96	0.92			Total FV
Derivative Fair Value		0.28	(0.28)			0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

DD Swap 3 Valuation						
	Years	1	2	3	4	5
Receive Fixed		12.29				
Pay Floating		(15.00)				
Derivative Net C/F		(2.71)				
DCF		0.96				Total FV
Derivative Fair Value		(2.58)				(2.58)

# Summary of valuations (BDs and DDs)

- Each of the three designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the summary of each derivatives and the combined total.
- In this scenario, the BDs are exactly the equal opposite of the DDs.

**End of period valuation**

	31 December 20X1			
<b><u>Designated Derivatives</u></b>	DD Swap 1	DD Swap 2	DD Swap 3	Total
Clean fair value	31.93	5.03	(2.58)	34.38
Life to date (LTD) Cash Settled	(3.82)	(0.58)	0.29	(4.11)
Total LTD fair value changes	28.10	4.45	(2.28)	30.27
<b><u>Benchmark Derivatives</u></b>	BD Swap 1	BD Swap 2	BD Swap 3	Total
Clean fair value	(31.93)	(5.03)	2.58	(34.38)
LTD Cash Settled	3.82	0.58	(0.29)	4.11
Total LTD fair value changes	(28.10)	(4.45)	2.28	(30.27)

This is the valuation (present value) of the **outstanding** or unrealised future cash flows of the swap at end of the period

This is the value of the **realised LTD accrual** (settled cash)

This is the value of the **total LTD gains** recognised in the P&L

## Calculation of the DRM adjustment

DRM adjustment is recognised in the statement of financial position, as the lower of (in absolute amounts):

- (i) the cumulative gain or loss on the designated derivatives from the inception of the DRM model; and
- (ii) the cumulative change in the fair value of the risk mitigation intention attributable to repricing risk from inception of the DRM model. This would be calculated using the benchmark derivatives as a proxy.

So in this example, (i) CU30.27 vs (ii) **CU(30.27)**

Once recognised, the realised benefit from the DRM will be recognised in the net interest income in statement of profit or loss over time, based on the lower of the coupon accrual profile between the benchmark derivative and the designated derivative, which means **CU(4.11)** in 20X1.



# Accounting entries for the period

Accounting entries for the year ending 20X1		
Underlying items	Dr Financial asset	56.41
	Cr Interest income	56.41
	<i>(Being the recognition of interest income accrued)</i>	
	Dr Interest expense	40.00
	Cr Financial liability	40.00
	<i>(Being the recognition of interest expense accrued)</i>	
Underlying items	Dr Financial liability	40.00
	Cr Financial asset	56.41
	Dr Cash (net)	16.41
<i>(Being the cash settlement of the interest income and expense accrued) (Net interest income recognised = 16.41)</i>		
Designated derivative	Dr Designated derivative	30.27
	Dr Net trading income	4.11
	Cr Net trading income	34.38
	<i>(Being the recognition of the fair value movement on the derivative, including the accrued element. Total gain in P&amp;L is (34.38 - 4.11) = 30.27)</i>	
Designated derivative	Dr Designated derivative	4.11
	Cr Cash	4.11
<i>(Being the cash settlement of the accrual)</i>		
DRM adjustment	Dr Net trading income	30.27
	Cr DRM adjustment	30.27
	<i>(Being the initial recognition of the DRM adjustment)</i>	
	Dr Net interest income	4.11
Cr DRM adjustment - realised benefit	4.11	
<i>(Being the realisation of the DRM benefit - Total DRM adjustment as at 31 December 20X1 is 34.38 as this is the future NII available to the entity)</i>		

For the period, the interest income and expense are driven by:  
 CU1000 fixed asset @ 4.38%    CU1,000 floating liability @ 4%  
 CU300 fixed asset @ 4.19%

### Snapshot - 31 December 20X1

	B/fwd	Net Δ	C/fwd	Notes
Net interest income	0.00	(12.30)	(12.30)	A
Net trading income	0.00	0.00	0.00	
Derivative	0.00	34.38	34.38	B
DRM adjustment	0.00	(34.38)	(34.38)	B
Cash	0.00	12.30	12.30	A

### Notes:

- A. CU300 notional of excess financial assets, modelled as 2-year 4.10% fixed to ensure stable NII for the first two years (in line with the entity's RMS) resulted in net interest income of CU12.30cr.
- B. The fair value changes in the designated derivatives are fully offset by the DRM adjustment, with no misalignment P&L for the period.

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## Scenario 4

Designation of financial assets and financial liabilities with misaligned notionals and partial risk mitigation in an adjacent repricing period

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## Scenario 4 - Assumptions

- In this example, it is assumed that as at 1<sup>st</sup> January 20X1 the entity has:
  - 1) a five-year 4.382% fixed rate mortgage with a notional of CU1,000 (FA1);
  - 2) a three-year 4.194% fixed rate loan with a notional of CU300 (FA2);
  - 3) a five-year term floating rate liability at 12-month benchmark rate with a notional of CU1,000 (FL1);
- The entity has more financial assets (CU1,300) than financial liabilities (CU1,000) designated in the DRM model, which implies the gap of CU300 might be funded by other sources of funding that are ineligible for the DRM model (such as equity).
- The entity's risk management strategy (RMS) are the same for all examples in scenario 2 to 4, which can be found on page 49. Consistent with its RMS, in Scenario 4, the entity intends to partially mitigate its interest rate risk exposures, and has traded derivatives with external counterparties accordingly.
- The entity is expected to reinvest its existing financial assets and refinance its existing financial liabilities after their expected maturity dates at the prevailing market rate at the maturity date.
- There is no unexpected change to the CNOP during the period.
- The yield curve assumptions are listed on page 8, which are the same as those described under Scenario 1 – 3.

# Determining CNOP

## Current net open risk position

On 1<sup>st</sup> January 20X1, the entity designates all the financial assets and financial liabilities in its CNOP based on the expected maturities. This is the same as the example in Scenario 3.

The entity also considers the reinvestment of existing financial assets and refinancing of existing financial liabilities after their expected maturity dates as floating rate exposures.

The entity's total repricing gap is illustrated as per the table to the right.

### CNOP as at 1 January 20X1

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
Financial asset FA1	1,000	1,000	1,000	1,000	1,000
Financial asset FA2	300	300	300		
<b>Total fixed rate exposures</b>	<b>1,300</b>	<b>1,300</b>	<b>1,300</b>	<b>1,000</b>	<b>1,000</b>
<b>Floating exposures</b>					
Financial liability FL1	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Reinvestment FA2				300	300
<b>Total floating rate exposures</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(700)</b>	<b>(700)</b>
<b>Notional</b>					
FA1	1,000				
FA2	300				
<b>Total Asset</b>	<b>1,300</b>				
FL1	(1,000)				
<b>Total Liability</b>	<b>(1,000)</b>				

The gap of CU300 between assets and liabilities is due to equity funding

# Designated Derivatives (DD)

## Designated Derivatives

On 1<sup>st</sup> January 20X1, the entity traded three vanilla interest rate swaps in order to achieve its risk management objective<sup>1</sup>:

- a) a 5-year pay fixed receive floating IR swap with notional of CU900 (DD Swap 1), as the entity decides to not fully mitigate the repricing risk in repricing period 20X5.
- b) a 4-year pay fixed receive floating IR swap with notional of CU300 (DD Swap 2), as the entity considers a 3-year IR swap too expensive to trade.
- c) a 2-year receive fixed pay floating IR swap with notional of CU200 (DD Swap 3)

### Designated Derivative as at 1 January 20X1

	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
<b>Fixed exposures</b>					
DD Swap 1	(900)	(900)	(900)	(900)	(900)
DD Swap 2	(300)	(300)	(300)	(300)	
DD Swap 3	200	200			
<b>Total fixed rate exposures</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,200)</b>	<b>(1,200)</b>	<b>(900)</b>
<b>Floating exposures</b>					
DD Swap 1	900	900	900	900	900
DD Swap 2	300	300	300	300	
DD Swap 3	(200)	(200)			
<b>Total floating rate exposures</b>	<b>1,000</b>	<b>1,000</b>	<b>1,200</b>	<b>1,200</b>	<b>900</b>

- Traded 4-year IR swap due to cost and market liquidity
- Partial risk mitigation for 90% of the open risk in 20X5

<sup>1</sup> Entity manages its entity-level interest rate risk for a 5-year time horizon, based on exposure in ΔNII for the first two years and ΔEVE for the remaining three years.

# Designating RMI

### Risk mitigation intention

The entity considers the available risk to mitigate in each time period as per the CNOP based on its management priority (ie  $\Delta$ NII or  $\Delta$ EVE), as well as the extent of risk being transferred out based on the DD.

In this case, the entity manages  $\Delta$ NII (floating exposures) for the first two years and  $\Delta$ EVE (fixed exposures) for the remaining three years (highlighted in yellow).


The entity would have failed the prospective assessment in repricing period 20X4, and thus adjustment is necessary when designating the RMI in this scenario.

**As at 1 January 20X1**

<u>CNOP</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,300	1,300	1,300	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,000)	(700)	(700)

<u>Designated Derivative</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	(1,000)	(1,000)	(1,200)	(1,200)	(900)
Floating exposures	1,000	1,000	1,200	1,200	900

Calculating RMI 

<u>Calculating RMI</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,200	1,200	900
Floating exposures	(1,000)	(1,000)	(1,200)	(1,200)	(900)
Management Priority	$\Delta$ NII	$\Delta$ NII	$\Delta$ EVE	$\Delta$ EVE	$\Delta$ EVE
Prospective assessment	Pass	Pass	Pass	Fail	Pass

# Designating RMI – continued

### Risk mitigation intention

In this scenario, the entity has to adjust the RMI to CU1,000 in repricing period 20X4 in order to pass the prospective assessment.

The RMI is thus designated as shown in the table to the right.

As at 1 January 20X1

<u>CNOP</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,300	1,300	1,300	1,000	1,000
Floating exposures	(1,000)	(1,000)	(1,000)	(700)	(700)
<u>Designated Derivative</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	(1,000)	(1,000)	(1,200)	(1,200)	(900)
Floating exposures	1,000	1,000	1,200	1,200	900

Determine the RMI based on CNOP, DD and prospective test



<u>Risk Mitigation Intention</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,200	1,000	900
Floating exposures	(1,000)	(1,000)	(1,200)	(1,000)	(900)
Management Priority	ΔNII	ΔNII	ΔEVE	ΔEVE	ΔEVE
Prospective assessment	Pass	Pass	Pass	Pass	Pass

Notes

- (a) RMI limited to 900 as only transferred out 900
- (b) RMI limited to 1,000 as available risk to mitigate was 1,000
- (c) RMI limited to 1,200 as only transferred out 1,200




# Construction of Benchmark Derivatives (BD)

## Benchmark Derivatives

On 1<sup>st</sup> January 20X1, four vanilla interest rate swaps are required as BDs to represent RMI:

- a) a 5-year receive fixed pay floating IR swap with notional of CU900 (BD Swap 1)
- b) a 4-year receive fixed pay floating IR swap with notional of CU100 (BD Swap 2)
- c) a 3-year receive fixed pay floating IR swap with notional of CU200 (BD Swap 3)
- d) a 2-year pay fixed receive floating IR swap with notional of CU100 (BD Swap 4)

These benchmark derivatives are used as documentation of the RMI for the period; and subsequently for measurement purposes

<u>Risk Mitigation Intention</u>	20X1	20X2	20X3	20X4	20X5
	CU	CU	CU	CU	CU
Fixed exposures	1,000	1,000	1,200	1,000	900
Floating exposures	(1,000)	(1,000)	(1,200)	(1,000)	(900)
 Construct the BD based on RMI					
<u>Benchmark Derivative</u>					
Fixed exposures					
BD Swap 1	900	900	900	900	900
BD Swap 2	100	100	100	100	
BD Swap 3	200	200	200		
BD Swap 4	(200)	(200)			
<b>Total Fixed</b>	<b>1,000</b>	<b>1,000</b>	<b>1,200</b>	<b>1,000</b>	<b>900</b>
Floating exposures					
BD Swap 1	(900)	(900)	(900)	(900)	(900)
BD Swap 2	(100)	(100)	(100)	(100)	
BD Swap 3	(200)	(200)	(200)		
BD Swap 4	200	200			
<b>Total Floating</b>	<b>(1,000)</b>	<b>(1,000)</b>	<b>(1,200)</b>	<b>(1,000)</b>	<b>(900)</b>



# Summary of BDs and DDs

- In summary, the entity would have the following designated derivatives and benchmark derivatives.
- The changes in the fair values of these derivatives will be used for the measurement of the DRM adjustment (based on the 'lower-of' test).
- In this scenario, the BDs are different to DDs because the entity used a 4-year IR swap to mitigate 3-year CNOP, and thus over-mitigated the risk in repricing period 20X4.

	Description	Notional	On-market rate	Start Date	End Date
<b><u>DD Swap 1</u></b>					
Pay fixed	5 yrs fixed	(900)	4.38%	1 Jan 20X1	31 Dec 20X5
Receive floating	5 yrs floating	900	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>DD Swap 2</u></b>					
Pay fixed	4 yrs fixed	(300)	4.29%	1 Jan 20X1	31 Dec 20X4
Receive floating	4 yrs floating	300	12m BMIR		

	Nature	Notional	On-market rate	Start Date	End Date
<b><u>DD Swap 3</u></b>					
Receive fixed	2 yrs fixed	200	4.10%	1 Jan 20X1	31 Dec 20X2
Pay floating	2 yrs floating	(200)	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>BD Swap 1</u></b>					
Receive fixed	5 yrs fixed	900	4.38%	1 Jan 20X1	31 Dec 20X5
Pay floating	5 yrs floating	(900)	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>BD Swap 2</u></b>					
Receive fixed	4 yrs fixed	100	4.29%	1 Jan 20X1	31 Dec 20X4
Pay floating	4 yrs floating	(100)	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>BD Swap 3</u></b>					
Receive fixed	3 yrs fixed	200	4.19%	1 Jan 20X1	31 Dec 20X3
Pay floating	3 yrs floating	(200)	12m BMIR		

	Description	Notional	On-market rate	Start Date	End Date
<b><u>BD Swap 4</u></b>					
Pay fixed	2 yrs fixed	200	4.10%	1 Jan 20X1	31 Dec 20X2
Receive floating	2 yrs floating	(200)	12m BMIR		

# Valuations of designated derivatives

- Each of the three designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for DD Swap 1 and DD Swap 2.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

### DD Swap 1 Valuation

	Years	1	2	3	4	5	
Pay Fixed		(39.44)	(39.44)	(39.44)	(39.44)	(39.44)	
Receive Floating		36.00	37.80	39.60	41.40	43.20	
Derivative Net C/F		(3.44)	(1.64)	0.16	1.96	3.76	
DCF		0.96	0.92	0.88	0.85	0.81	Total FV
Derivative Fair Value		(3.31)	(1.52)	0.14	1.65	3.03	0.00

### DD Swap 2 Valuation

	Years	1	2	3	4	5	
Pay Fixed		(12.87)	(12.87)	(12.87)	(12.87)		
Receive Floating		12.00	12.60	13.20	13.80		
Derivative Net C/F		(0.87)	(0.27)	0.33	0.93		
DCF		0.96	0.92	0.88	0.85		Total FV
Derivative Fair Value		(0.83)	(0.25)	0.29	0.79		0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

### DD Swap 1 Valuation

	Years	1	2	3	4	5	
Pay Fixed		(39.44)	(39.44)	(39.44)	(39.44)		
Receive Floating		45.00	46.80	48.60	50.40		
Derivative Net C/F		5.56	7.36	9.16	10.96		
DCF		0.95	0.91	0.86	0.81	0.81	Total FV
Derivative Fair Value		5.29	6.66	7.87	8.91		28.73

### DD Swap 2 Valuation

	Years	1	2	3	4	5	
Pay Fixed		(12.87)	(12.87)	(12.87)			
Receive Floating		15.00	15.60	16.20			
Derivative Net C/F		2.13	2.73	3.33			
DCF		0.95	0.91	0.86			Total FV
Derivative Fair Value		2.03	2.47	2.86			7.37

# Valuations of designated derivatives

- Each of the three designated derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for DD Swap 3.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

DD Swap 3 Valuation						
	Years	1	2	3	4	5
Receive Fixed		8.20	8.20			
Pay Floating		(8.00)	(8.40)			
Derivative Net C/F		0.20	(0.20)			
DCF		0.96	0.92			Total FV
Derivative Fair Value		0.19	(0.19)			0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

DD Swap 3 Valuation						
	Years	1	2	3	4	5
Receive Fixed		8.20				
Pay Floating		(10.00)				
Derivative Net C/F		(1.80)				
DCF		0.95				Total FV
Derivative Fair Value		(1.72)				(1.72)

# Valuations of benchmark derivatives

- Each of the four benchmark derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for BD Swap 1 and BD Swap 2
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

### BD Swap 1 Valuation

	Years	1	2	3	4	5	
Receive Fixed		39.44	39.44	39.44	39.44	39.44	
Pay Floating		(36.00)	(37.80)	(39.60)	(41.40)	(43.20)	
Derivative Net C/F		3.44	1.64	(0.16)	(1.96)	(3.76)	
DCF		0.96	0.92	0.88	0.85	0.81	Total FV
Derivative Fair Value		3.31	1.52	(0.14)	(1.65)	(3.03)	0.00

### BD Swap 2 Valuation

	Years	1	2	3	4	5	
Receive Fixed		4.29	4.29	4.29	4.29		
Pay Floating		(4.00)	(4.20)	(4.40)	(4.60)		
Derivative Net C/F		0.29	0.09	(0.11)	(0.31)		
DCF		0.96	0.92	0.88	0.85		Total FV
Derivative Fair Value		0.28	0.08	(0.10)	(0.26)		0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

### BD Swap 1 Valuation

	Years	1	2	3	4	5	
Receive Fixed		39.44	39.44	39.44	39.44		
Pay Floating		(45.00)	(46.80)	(48.60)	(50.40)		
Derivative Net C/F		(5.56)	(7.36)	(9.16)	(10.96)		
DCF		0.95	0.91	0.86	0.81		Total FV
Derivative Fair Value		(5.29)	(6.66)	(7.87)	(8.91)		(28.73)

### BD Swap 2 Valuation

	Years	1	2	3	4	5	
Receive Fixed		4.29	4.29	4.29			
Pay Floating		(5.00)	(5.20)	(5.40)			
Derivative Net C/F		(0.71)	(0.91)	(1.11)			
DCF		0.95	0.91	0.86			Total FV
Derivative Fair Value		(0.68)	(0.82)	(0.95)			(2.46)

# Valuations of benchmark derivatives

- Each of the four benchmark derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the valuations for BD Swap 3 and BD Swap 4.
- The present values of future cash flows are shown in yellow and the accruals for the period are shown in blue.

as at 1st Jan 20X1 - beginning of the period

### BD Swap 3 Valuation

	Years	1	2	3	4	5	
Receive Fixed		8.39	8.39	8.39			
Pay Floating		(8.00)	(8.40)	(8.80)			
Derivative Net C/F		0.39	(0.01)	(0.41)			
DCF		0.96	0.92	0.88			Total FV
Derivative Fair Value		0.37	(0.01)	(0.36)			0.00

### BD Swap 4 Valuation

	Years	1	2	3	4	5	
Pay Fixed		(8.20)	(8.20)				
Receive Floating		8.00	8.40				
Derivative Net C/F		(0.20)	0.20				
DCF		0.96	0.92				Total FV
Derivative Fair Value		(0.19)	0.19				0.00

as at 31st Dec 20X1 / 1st Jan 20X2 - end of the period

### BD Swap 3 Valuation

	Years	1	2	3	4	5	
Receive Fixed		8.39	8.39				
Pay Floating		(10.00)	(10.40)				
Derivative Net C/F		(1.61)	(2.01)				
DCF		0.95	0.91				Total FV
Derivative Fair Value		(1.53)	(1.82)				(3.36)

### BD Swap 4 Valuation

	Years	1	2	3	4	5	
Pay Fixed		(8.20)					
Receive Floating		10.00					
Derivative Net C/F		1.80					
DCF		0.95					Total FV
Derivative Fair Value		1.72					1.72

# Summary of valuations (BDs and DDs)

- Each of the derivatives are valued as at 1<sup>st</sup> January 20X1 and 31<sup>st</sup> December 20X1.
- Below are the summary of each derivatives and the combined total.
- In this scenario, the valuation of the BDs and DDs and their respective accruals are different.
- The entity therefore determines the DRM adjustment based on the ‘lower-of’ test.

**End of period valuation**

	31 December 20X1				
<b>Designated Derivatives</b>	DD Swap 1	DD Swap 2	DD Swap 3		Total
Clean fair value	28.73	7.37	(1.72)		34.38
Life to date (LTD) Cash Settled	(3.44)	(0.87)	0.20		(4.11)
Total LTD fair value changes	25.29	6.50	(1.52)		30.27
<b>Benchmark Derivatives</b>	BD Swap 1	BD Swap 2	BD Swap 3	BD Swap 4	Total
Clean fair value	(28.73)	(2.46)	(3.36)	1.72	(32.83)
LTD Cash Settled	3.44	0.29	0.39	(0.20)	3.92
Total LTD fair value changes	(25.29)	(2.17)	(2.97)	1.52	(28.91)

This is the valuation (present value) of the **outstanding** or unrealised future cash flows of the swap at end of the period

This is the value of the **realised LTD accrual** (settled cash)

This is the value of the **total LTD gains** recognised in the P&L

## Calculation of the DRM adjustment

DRM adjustment is recognised in the statement of financial position, as the lower of (in absolute amounts):

- (i) the cumulative gain or loss on the designated derivatives from the inception of the DRM model; and
- (ii) the cumulative change in the fair value of the risk mitigation intention attributable to repricing risk from inception of the DRM model. This would be calculated using the benchmark derivatives as a proxy.

So in this example, (i) CU30.27 vs (ii) **CU(28.91)**

Once recognised, the realised benefit from the DRM will be recognised in the net interest income in statement of profit or loss over time, based on the lower of the coupon accrual profile between the benchmark derivative and the designated derivative, which means **CU(3.92)** in 20X1.

# Accounting entries for the period

Accounting entries for the year ending 20X1		
Underlying items	Dr Financial asset	56.41
	Cr Interest income	56.41
	<i>(Being the recognition of interest income accrued)</i>	
	Dr Interest expense	40.00
	Cr Financial liability	40.00
	<i>(Being the recognition of interest expense accrued)</i>	
Underlying items	Dr Financial liability	40.00
	Cr Financial asset	56.41
	Dr Cash (net)	16.41
	<i>(Being the cash settlement of the interest income and expense accrued) (Net interest income recognised = 16.41)</i>	
Designated derivative	Dr Designated derivative	30.27
	Dr Net trading income	4.11
	Cr Net trading income	34.38
	<i>(Being the recognition of the fair value movement on the derivative, including the accrued element. Total gain in P&amp;L is (34.38 - 4.11) =30.27)</i>	
Designated derivative	Dr Designated derivative	4.11
	Cr Cash	4.11
<i>(Being the cash settlement of the accrual)</i>		
DRM adjustment	Dr Net trading income	28.91
	Cr DRM adjustment	28.91
	<i>(Being the initial recognition of the DRM adjustment)</i>	
	Dr Net interest income	3.92
Cr DRM adjustment - realised benefit	3.92	
<i>(Being the realisation of the DRM benefit - Total DRM adjustment as at 31 December 20X1 is 32.83 as this is the future NII available to the entity)</i>		

For the period, the interest income and expense are driven by:  
 CU1000 fixed asset @ 4.38%    CU1,000 floating liability @ 4%  
 CU300 fixed asset @ 4.19%

### Snapshot - 31 December 20X1

	B/fwd	Net Δ	C/fwd	Notes
Net interest income	0.00	(12.49)	(12.49)	A
Net trading income	0.00	(1.36)	(1.36)	B
Derivative	0.00	34.38	34.38	B
DRM adjustment	0.00	(32.83)	(32.83)	B
Cash	0.00	12.30	12.30	A

### Notes:

- A. Total NII is CU12.49, of which CU12.30 is due to CU300 notional of excess financial assets modelled as 2-year 4.10% fixed to ensure stable NII for the first two years, and the other CU0.19 due to the impact of the DRM misalignment on NII (accruals are CU4.11 for DDs and CU3.92 for BDs).
- B. Total NTI is CU1.36, as the fair value changes in the DDs are partially offset by the DRM adjustment due to the impact of the DRM misalignment (mainly driven by the trade in adjacent repricing period).



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