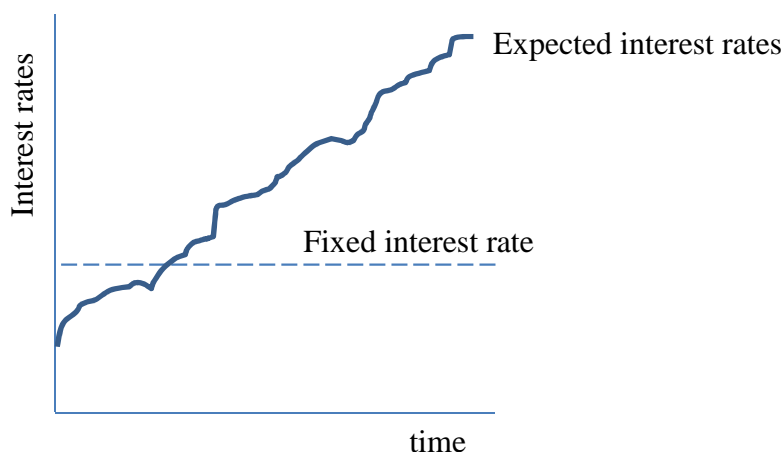


# Interest Rate Swaps – example 11

## Example 11: Using a floating for fixed interest rate swap to hedge out cash flow risk

Entity A issued 5 year bonds on 1 January 2010 for R1 million. The bonds bear interest at prime + 2% per annum, paid semi-annually in arrears. The bonds are measured at amortised cost.

On 1 July 2011, the financial manager was of the view that interest rates were increasing and consequently decided to hedge out “potential losses” of having to pay high market interest rates.



What risk relating to the fixed interest rate on the bond, is entity A exposed to (fair value or cash flow) and why?

On 1 July 2011, the financial manager entered into a *two year* interest rate swap agreement with a notional amount of R1 million. In terms of the interest rate swap agreement, the entity will receive a 6 month floating interest rate of prime + 2% p.a. and pay a fixed semi-annual interest rate of 7%. Assume that net payments on the swap agreement are settled every six months, at which date the variable rate payable during the following six months is set.

The prime interest rates for the six months ending on the respective dates were as follows:

1 January 2011: 10%

1 July 2011: 11%

31 December 2011: 14%

At 31 December 2011 and at 31 December 2012, the prime interest rate was expected to remain 14% for the remaining life of the bonds.

Assume that the fair value on the hedged item is the same as that of the hedging instrument for the years ended 31 December 2011 and 31 December 2012.

**You are required to:**

**A. Prepare the journal entries required to account for the bond and the IRS for the year ended 31 December 2011.**


**B. Prepare the journal entries required to account for the bond and the IRS for the year ended 31 December 2012.**

## WORKINGS FOR PART A:

### 1. Movement in fair value of the interest rate swap (hedging instrument)

At inception of the interest rate swap (IRS) agreement, the fair value is nil. This is because when the instrument is issued, the entity issuing the IRS expects the overall PV of the net cash flows to be nil, i.e the total net cash flow (received less paid) is expected to be nil. However the market interest rates will inevitably move differently to the expectations of the issuing entity (bank). Consequently the fair value of the swap is calculated at year end and approximates the present value of expected future net cash flows.

Interest rate swap	YEAR END			
	Dec-11	Jun-12	Dec-12	Jun-13
Receive variable	65 000	80 000	80 000	80 000
Pay fixed	-70 000	-70 000	-70 000	-70 000
Net cash flows	-5 000	10 000	10 000	10 000

  
PV future expected cash inflows

**Clean value (fair value excluding current year cash outflow of R5 000) is calculated as follows:**

$$\text{Pmt} = \text{R}10\,000$$

$$N = 3$$

$$i = 8\% \text{ (} 14\% + 2\% \text{)} \times 6/12 \text{ months}$$

$$\text{PV} = \text{R}25\,771$$

The movement in the fair value for the year ended 31 December 2011 is therefore a gain of R25 771.

### 2. What is the hedged item?

## SOLUTION FOR PART A

### Journal entries for hedge accounting at 31 December 2011

#### Accounting for the current year interest

1	Dr interest expense	125 000	
	Cr Bonds		125 000
	<i>Interest on bonds at a semi-annual effective interest rate of 6% from Jan to June and 6.5% from July to Dec.</i>		
2	Dr Bonds	125 000	
	Cr Bank		125 000
	<i>Payment of coupon in June 2011 and December 2011</i>		
3a	Dr Interest expense (loss on swap)	5 000	
	Cr Bank		5 000
	<i>Net cash flow arising from IRS (receive 6.5% variable and pay 7% fixed) x R1m</i>		

#### Accounting for fair value changes of future anticipated swap cash flows

4a	Dr Swap (receivable)	25 771	
	Cr Cash flow hedge reserve (OCI)		25 771
	<i>Transfer of "clean fair value" of swap to cash flow reserve</i>		

#### **Alternatively** journals 3a and 4a could have been replaced with the following entries:

3b	Dr Swap (receivable)	20 771	
	Cr Cash flow hedge reserve (OCI)		20 771
	<i>"Dirty" value of swap transferred to the cash flow hedge reserve. Dirty value is the fair value of the swap INCLUDING the cash flow settled at the end of the current year.</i>		
4b	Dr Swap	5 000	
	Cr Bank		5 000
	<i>Current year net cash outflow settled against the swap "payable/receivable" account</i>		
5	Dr interest expense (loss on swap)	5 000	
	Cr Cash flow hedge reserve (OCI)		5 000
	<i>Releasing FV adjustments on hedge relating to current year exposure from hedge reserve</i>		

#### Total interest expense for the year ended 31 December 2011

	<b>R</b>
Effective interest rate on bond	-125 000
Interest effect of hedge	-5 000
	-130 000


This hedge is perfectly effective. The total interest expense reported represents interest at a floating rate of 6.0% for 6 months (unhedged) and interest at a fixed rate of 7% for the second six months of the year (hedged).

## WORKINGS FOR PART B:

### 1. Movement in fair value of the interest rate swap (hedging instrument) in year 2

#### Calculation of FV of swaps at end of December 2012

Interest rate swap	YEAR END		
	Jun-12	Dec-12	Jun-13
Receive variable	80 000	80 000	<b>80 000</b>
Pay fixed	-70 000	-70 000	<b>-70 000</b>
Net cash flows	10 000	10 000	<b>10 000</b>

 PV future expected cash inflow

**Clean value (fair value excluding year end cash inflow of R10 000) is calculated as follows:**

$$\text{Pmt} = \text{R}10\,000$$

$$N = 1$$

$$i = 8\% \text{ (} 14\% + 2\% \text{)} \times 6/12 \text{ months}$$

$$\text{PV} = \text{R}9\,259$$

The movement in the fair value for the year ended 31 December 2012 is therefore a loss of R16 512 (R25 771 – R9 259).

## SOLUTION FOR PART B

### Journal entries for hedge accounting at 31 December 2012

#### Accounting for the current year interest

1	Dr interest expense	160 000	
	Cr Bonds		160 000
	<i>Interest on bonds at a semi-annual effective interest rate of 8%</i>		
2	Dr Bonds	160 000	
	Cr Bank		160 000
	<i>Payment of coupon in June 2012 and December 2012</i>		
3a	Dr Bank	20 000	
	Cr Interest expense		20 000
	<i>Net cash flow arising from IRS (7% fixed less 8% variable) x R1m x 2 periods</i>		

#### Accounting for fair value changes of future coupon payments and anticipated swap cash flows

4a	Dr Cash flow reserve (OCI)	16 512	
	Cr Swap		16 512
	<i>Cash flow reserve reflected at cumulative effective hedge</i>		

#### **Alternatively**, journals 3a and 4a can be replaced with the following:

3b	Dr Bank	20 000	
	Cr Swap		20 000
	<i>Settlement of net cash flow against the receivable (swap account)</i>		
4b	Dr Cash flow reserve (OCI)	20 000	
	Cr Interest expense		20 000
	<i>Release of current portion of hedge from hedge reserve</i>		
5	Dr Swap (receivable)	3 488	
	Cr Cash flow hedge reserve (OCI)		3 488
	<i>Cash flow reserve reflected at cumulative effective hedge</i>		

#### Total interest expense for the year ended 31 December 2012

	<b>R</b>
Effective interest rate on bond	-160 000
Interest effect of hedge	20 000
	<u>-140 000</u>

The total interest expense reported for the period is therefore R140 000 which is what one would expect as we have swapped the floating semi-annual rate of 8% for a semi-annual fixed rate of 7% during the whole year.

Please note, that in this example the hedge was perfectly effective. In the instance when the hedge is not perfectly effective, then the interest reported may not be exactly at the fixed rate of 7% as it will include some ineffectiveness.