CONSTRUCTION OF AN INTEREST RATE SWAP

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Steps, Example practise & Analysis

Interest rate swap is the most common type of swap. The typical or generic known as 'Plain Vanilla' interest rate swap is a fixed for floating swap whereby cash flows depend on the movement of variable interest rates.

Where a company with say, a floating interest rate commitment, is exposed to interest rate risk or an adverse effect of interest rate movements, refinancing at a fixed interest rate maybe one solution to the problem. However, the transaction costs of refinancing and the fixed interest rate offered, maybe unfavourable to the company.

Entering an interest rate swap, may therefore be a better hedging strategy.

A swap arrangement can be constructed in a manner that would allow the swap parties to meet their requirements and pay interest at a lower rate than that obtainable from a bank.

Steps for constructing an interest rate swap

Step 1- Determine the difference in bank rates given the normal interest rate commitment and refinance rates for both companies

	Co A Plc		Co B Plc	Difference
1a) fixed rate option	X% fixed	-	Y%fixed	X%-Y% fixed
1b) floating rate option	(X% floating)	-	(Y%floating)	(X%-Y% floating)
Difference				Z%

Step 2- Set out a table showing the potential gain

	Co A Plc	Co B Plc	Total
2a) Company desires (opposite of their normal Commitment)	Floating	Fixed	
2b) Refinance rates (alternative from bank)	(X% floating)1b	(Y% fixed)1a	(X%floating-Y%fixed)
2c) Normal commitment	X% fixed 1a	Y% floating 1b	X%fixed-Y%floating
Potential gain			Z% 1

Step 3- <u>Establish the target rate by splitting the potential gain accordingly</u>

	Co A Plc	Co B Plc	Total
3a) Gain split accordingly	Zx%	Zy%	
3b) Company desires	Floating → X% floating 2b	Fixed →Y% fixed 2b	
3c) Swap obtainable with gain split/ target interest rate	(X%floating – Zx %) 3b 3a	+ (Y% fixed – Zy %) 3b 3a	(X%floating – Zx% + Y% - Zy %)

Step 4- <u>Construct a swap that produces the target interest rate</u>

	Co A Plc		Co B Plc	Total
Normal Commitment 2c	(X% fixed)	+	(Y% floating)	(X% fixed + Y% floating)
Swap Terms:				
Swap floating (received from other party before swap)	(Y% floating) ==> cancels out		Y% floating	nil
Swap fixed 3c (target interest rate received from other party after swap)	Y% fixed – Zy %==>		(Y% fixed – Zy %)	nil
Net Payment/Cost	Total	+	Total	(X% fixed + Y% floating)
Set off: Refinance rates (2b)	X% floating	+	Y% fixed	X%floating-Y%fixed
Gain/Net Savings (should come to)	Zx%		Zy%	Z%

Step 5 – <u>Summary or overall effect</u>

With Swap:
Net payment/Cost by Co A= as step 4
Net payment/Cost by Co B= as step 4

Note- For an interest rate swap to result in a gain for both parties:

a) Each co must borrow in the loan market in which it has comparative advantage
→'Normal commitment' line in swap construction (step 4)
b) The parties must actually want interest of the opposite type to that in which they have comparative advantage→ 'Company desires' line in swap construction (step 2)

Example- Success Plc has been given a high credit rating. It can borrow at a fixed rate of
11% or at a variable rate equal to LIBOR which is 11% at the moment.
Success Plc would like to borrow at a variable rate.

Prospective Plc is a company with lower credit rating, which can borrow at a fixed rate
of 12.5% or at a variable rate of LIBOR + 0.5%. It would like to borrow at a fixed
rate.

Requirement:
Construct an interest swap arrangement that will allow both parties to meet their requirements and
pay interest at a lower rate than that obtainable from a bank.

1- Difference in rates

	Success Plc		Prospective Plc	Difference
1a) fixed rate option	11% fixed	-	12.5%	1.5%
1b) floating rate option	(LIBOR)	-	(LIBOR+ 0.5%)	(0.5%)
1c) Difference				1.0%

Analysis- i) Success Plc will make savings in both markets however, its advantage is
comparatively higher in the fixed interest market.

ii) Success Plc is a fixed rate payer thus a floating/variable rate receiver with swap.
Prospective Plc is a floating rate payer thus a fixed rate receiver with swap.

iii) The difference in rates represents a potential gain obtainable with a swap
arrangement.

2- Potential gain

	Success Plc		Prospective Plc	Total
2a) Company desires	Variable/Floating		Fixed	
2b) Refinance rate	(LIBOR) 1b	+	(12.5%) 1a	(LIBOR + 12.5%)
2c) Normal Commitment	11% fixed 1a	+	LIBOR + 0.5% 1b	LIBOR + 11.5%
Potential gain				1.0%

Analysis- The potential gain could then be split between the parties in different proportions to
establish the target rate. This will effectively result in a lower rate than that obtainable from
refinancing.

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3- Target interest rate

	Success Plc	Prospective Plc	Total
3a) Gain split evenly	0.5%	0.5%	1.0%

3b) Company desires 2b	Variable/Floating	Fixed
	➜ LIBOR	➜ 12.5%

3c) Swap obtainable with gain split / established target rate (company desires less 0.5%)	(LIBOR - 0.5%) +	(12%) (12.5%-0.5%)	(LIBOR + 11.5%)

Analysis- i) The rate that each company will pay after the swap is thus 0.5% less than what they would have paid by refinancing.

ii) If refinanced, Success Plc would pay LIBOR but with swap would pay LIBOR-0.5%.
If refinanced, Prospective Plc would pay 12.5% fixed but with swap would pay 12%.

iii) Once the target interest rate for each party of the swap has been established, there are an unlimited number of swap arrangements, which will produce the same net result.

4- Swap Construction

	Success Plc	Prospective Plc	Total
Normal Commitment 2c	(11% fixed) +	(LIBOR + 0.5%)	(LIBOR + 11.5%)
Swap Terms:			
Swap floating (received from other party before swap)	(LIBOR + 0.5%)==>	LIBOR + 0.5% cancels out	nil
Swap fixed (established target rate received from other party after swap) 3c	12% ==>	(12%)	nil
Net Payment	(LIBOR-0.5%) +	(12%)	(LIBOR + 11.5%)
Set off:			
Refinance rate	LIBOR +	12.5%	LIBOR + 12.5%
Gain/Net Savings	0.5% +	0.5%	1.0%

Analysis – i) The alternative swap that will result in both parties being better off by 0.5% each are as follows:
-Success Plc pays all Prospective's interest at LIBOR – 0.5% as shown above
-Prospective Plc reciprocates by paying fixed interest to Success Plc at 12%

ii) Success ends up paying floating/variable rate
iii) Prospective Plc ends up paying fixed rate