

Reading somebody else's hedging proposal: the seven questions

Chapter 18. Ask them out loud, in the meeting, before the strikes, the premiums or the documentation. Each was earned by a chapter that had to compute something first.

Company		Prepared by	
Programme		Date	

#	The question	At Kilmartin	On this proposal
1	What is the number you are calling the cost, and how much of it is forward points?	All of it: 1,233,698, the interest differential	
2	What has this instrument earned against the forwards, not against the path?	1,110,000 on the path, minus 132,801 at the forwards	
3	Does this hedge protect the level, or only the change? After the first expiry, what sets the level?	Only the change, with a year's lag	
4	What are the legs of this structure worth, separately, today? At what strike would it truly be free?	Cap 182.84, floor 122.18; free floor 2,447.51	
5	Which other policies were priced on this same path, and what is the best-to-worst range of each?	None; the spread was 35,179,321	
6	What does it call in cash, on which settlement convention, against what drawable liquidity?	31,000,344 to 43,749,502 against 36,000,000	
7	And if the market moves the other way, in every hedged variable?	Minus 200 basis points calls 11,335,005 on the swap	

Item	Answered?	Figure
The three answers that come back without a question of their own		
Where the accounting reports the difference (chapter 9): it decides where, not whether		
On which curve the valuation note was discounted (chapter 11): 18,262 on this swap		
What the unhedged share is worth across the path (chapter 10): 3,759,398 here		

If four of the seven come back the same day, the proposal has been thought about. If question six comes back with one number rather than two, the convention has not been chosen; it has been assumed.

The cost line, relabelled

Chapters 1 and 2. The reported cost is forward points: carry. The real cost is three lines, in present value, and the largest is in the rate.

Company		Prepared by	
Programme		Date	

Test	Your programme	Kilmartin
Spot and one-year forward; forward points as a share of spot		
Sterling in a year, sold forward		
Sterling in a year, sold spot and funded (must match to the penny)		
What the report calls the cost of hedging		
What the bank receives of it (the honest heading)		

Real cost line	Basis	Level a year	Present value (x annuity)
Dealer spread on the swap	bp over mid x notional		
Bid and offer on the currency	pips on spot, each year reconducted		
Credit charge in the rate	bp x (notional + year's forward sales)		
Total real cost			
The report on the same five-year basis	each year's points, discounted		
Ratio, reported over real			

Kilmartin, for comparison	Figure
Annuity, five sterling discount factors	4.426684
Swap spread, 2.5 bp on 120,000,000	132,801
Bid and offer, 8 pips on 1.2500 (69,076 a year)	305,777
Credit charge, 11 bp (249,443 a year)	1,104,205
Total real cost	1,542,782
Reported cost, same basis	5,715,274 (3.70 times)

Ask the desk to show the credit component of the rate before dealing; after the trade it is a conversation about history. A cost line that carries forward points and omits the credit charge has the two largest facts backwards.

The swap report: the combined line and the forwards

Chapter 3. Report what the swap was bought to make true - the combined interest bill - and keep the forward curve that priced the trade.

Company		Prepared by	
Programme		Date	

Year	Floating rate set	Implied forward on the dealing day	Gap, bp	Swap flow	Debt interest	Combined bill

Kilmartin	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Floating	3.8500	4.5500	5.2000	4.9500	4.3000	
Implied forward	3.8500	4.1153	4.4184	4.6761	4.8534	
Swap flow	-642,000	198,000	978,000	678,000	-102,000	1,110,000
Combined bill	6,417,000	6,627,000	6,822,000	6,747,000	6,552,000	33,165,000

Statement	Checked on our book	Note
Four statements that hold on any book		
The interest bill hedged at ratio h keeps one minus h of the swing: 405,000 against 2,025,000 here, a factor of five		
A swap dealt at mid is worth zero on the day it is dealt, on any curve		
The dealer spread is the whole day-one value and it does not decay: minus 132,801 here		
Any figure reported as what a swap earned is a statement about a path, unless the report shows the forwards		

Every figure above the at-forwards value in the report is a path, and paths reverse.

The rolling programme: one row a year

Chapters 4 and 8. Each year reduces to one comparison: did the rate end above or below where it was struck, grossed up by the carry?

Company		Prepared by	
Programme		Date	

Year	Struck at (last year's settlement)	Carry multiplier	Struck, grossed up	Settlement	Ratio, settlement over struck	Sign	Result

Kilmartin	Struck	Forward	Settlement	Ratio	Result
1	1.2500	1.2644	1.1900	0.952000	-6,679,076
2	1.1900	1.2038	1.1400	0.957983	-6,271,576
3	1.1400	1.1532	1.1750	1.030702	2,174,696
4	1.1750	1.1886	1.2200	1.038298	2,925,434
5	1.2200	1.2341	1.2600	1.032787	2,248,845
Total					-5,601,676

Question	Answer	Note
Questions for the board paper		
For how long is the percentage hedged, and struck at what?		
What sets the level after the first expiry? (a multiplier on whatever the market prints is the usual answer)		
Is the annual result shown against the struck rate grossed up by carry?		
Does the paper say "75 per cent hedged" where it means "75 per cent of this year, for one year"?		

Carry here is 1.011555, the ratio of the two one-year deposit rates. A rolling programme protects the year's change, a year late. It never protects the level.

Three policies on one page

Chapter 5. The page that states what the policy sentence is worth: the company's own invoicing, its own settlement rates, three tenors.

Company		Prepared by	
Programme		Date	

Policy	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Against nothing	Best less worst

Kilmartin	Total over five years	Against doing nothing	Range, best year less worst
Do nothing	752,744,857	-	15,037,594
Roll twelve months, 75 per cent	747,143,181	-5,601,676	10,784,758
Lock five years at the outset	711,963,860	-40,780,997	6,541,644

Proportions	Kilmartin	Yours
Spread between best and worst policy	35,179,321	
Total real cost of the programme	1,542,782	
Policy choice over total real cost	22.80	
Policy choice over the spreads paid	80.21	
Policy choice as a share of a year's EBITDA	79.6%	

Hedging buys range, not a gain. For a seller of dollars the adverse path is sterling strengthening: that is the path on which locking protects and rolling gives the protection back after a year.

The collar term sheet, interrogated

Chapters 6 and 7. "Premium: nil" is a statement about cash on the day of dealing. Convert it into two numbers, then ask for the rollover formula.

Company		Prepared by	
Programme		Date	

Question	Answer
Which way round does the company sit? (a consumer buys the cap and sells the floor)	
The forward used, and the volatility used	
The bought leg, valued separately, per unit	
The sold leg, valued separately, per unit	
Net value, and to whom it transfers	
The strike at which the sold leg would have made the structure truly free	
Distance of each strike from the forward (not from spot)	

Year	Fixing (price at the start)	Cap = multiplier x fixing	Floor = multiplier x fixing	Price at settlement	Settlement

Kilmartin	Figure
Forward, 24 per cent volatility	2,550.94
Cap bought at 2,680 / floor sold at 2,300, a tonne	182.84 / 122.18
Transfer to the company, 26,000 tonnes	1,577,235
Premium-free floor	2,447.51
Multipliers in the rollover clause	1.093878 and 0.938776
Year three: floor re-fixed at 2,731.84, price 2,640	-2,387,755

The strikes on the term sheet apply to the first year only. The durable number is the rollover formula: it is negotiated once and applied every year, on prices nobody has seen.

The accounting memo and the derivative note

Chapters 9 and 10. Read the memo for what it decides - statement, timing, recycling - and the note for what it leaves out.

Company		Prepared by	
Programme		Date	

Hedge accounting memo	Answer
Hypothetical derivative: at what rate does it deal? (mid)	
Rate dealt, less mid, in money, discounted over the life (the base for ineffectiveness)	
The same base after each coupon (it shrinks, never closes)	
Largest year-on-year change in the swap's fair value, against that base	
What the memo moves: the statement and the year. What it does not move: the cash	

The two-minute calculation on any set of accounts	Kilmartin	Yours
Hedge ratio, from the policy description	75 per cent	
Unhedged share, applied to foreign revenue	45,000,000 dollars	
Highest and lowest rates of the last five years	1.1400 and 1.2600	
Sterling value at each	39,473,684 / 35,714,286	
The swing no line of the accounts reports	3,759,398	
Same for the unhedged share of floating debt	30,000,000: 405,000 a year	

The accounting is quietest exactly where the exposure is least managed: the machinery follows the instrument, and where there is no instrument it has nothing to attach to.

The valuation note and the collateral annex

Chapter 11. The same cash flows have more than one correct present value; the annex decides which.

Company		Prepared by	
Programme		Date	

On the valuation note	Answer
Value, to the pound	
Curve it was discounted on: unsecured, or the collateral rate?	
Is the swap under a collateral agreement? Since when?	
Sign of the position today (an asset gains from lower discounting, a liability deepens)	
Back-of-envelope: shift in bp x value x average life. Does the gap behave?	
Is this the termination number or the funding number?	

In the collateral annex	Figure
Rate paid on posted cash	
Threshold, each party	
Minimum transfer amount	
Eligible collateral (cash only? securities?)	
Valuation and call time; deadline for delivery	
Return of collateral on a settlement date: same day, next day?	

Kilmartin	Figure
Swap discounted unsecured	4,329,297
Discounted at the collateral rate, 15 bp below	4,347,559
Difference	18,262 (1.52 bp of notional)
Implied average life	2.81 years

The four moments a valuation becomes a payment: termination, novation, the collateral call, the accounts.

The cash table every hedging proposal should carry

Chapters 12 and 16. What the cover costs in cash on the morning after the exposure moves in the company's favour, at several sizes of move, against liquidity drawable that day.

Company		Prepared by	
Programme		Date	

Fall in the currency	Spot	Call, policy A	Call, policy B	Ratio	Quarter's commercial gain	Drawable liquidity	Fits?

Kilmartin	Rolling	Locked five years	Ratio	Quarter's gain
5 per cent	5,610,228	24,880,449	4.43	473,684
8 per cent	9,182,846	41,020,602	4.47	782,609
10 per cent	11,696,910	52,378,487	4.48	1,000,000
15 per cent	18,499,672	83,111,588	4.49	1,588,235
20 per cent	26,152,780	117,686,327	4.50	2,250,000

Break-evens, 36,000,000 drawable	Spot	Fall
Rolling	0.9296	25.63 per cent
Locked five years	1.1614	7.09 per cent

Run at least two sizes of shock: the call bends upwards. Twice the 10 per cent call understates the 20 per cent call by 12,929,353 on the locked policy.

The settlement convention and the facility

Chapter 13. "Would we have survived?" has the answer of a date convention. Find the line in the stress test that fixes it.

Company		Prepared by	
Programme		Date	

In the liquidity stress test	Answer
When is collateral against an expiring tenor measured: before or after it settles?	
When is it deemed returned: same day, next collateral cycle, later?	
Peak call on each convention	
Available liquidity: cash, plus which facilities?	
Can the committed facility be drawn overnight to post margin? (notice period, certificate, repeating representation)	
Liquidity if it cannot: cash alone	
Does a swap coupon ever land on a currency settlement date?	

Kilmartin, locked policy	Peak call	Liquidity left	Cushion
Before settlement	43,749,502	-7,749,502	-21.5 per cent
After settlement	31,000,344	4,999,656	13.9 per cent
Rolling, either	5,969,577	30,030,423	83.4 per cent

Step	Done	By whom
Before a collateral agreement is signed		
The facility agreement read for drawdown notice and conditions		
The convention written into the stress test, with its owner named		
The cash-only case run as well as the facility case		

A breach on the before-settlement convention is a day on which the company depends on somebody else's forbearance. A cushion on the after-settlement convention is a day on which it does not.

The counterparty list, read as a liquidity document

Chapter 14. Netting is a property of the agreement, not of the bank. List every derivative, its legal entity and its agreement.

Company		Prepared by	
Programme		Date	

Derivative	Our entity	Counterparty entity	Master agreement	Collateral annex	Threshold	MTA	Mark in the stress

Collateral in the stress scenario	Figure
Summed as though everything netted	
Summed agreement by agreement (what actually happens)	
Difference: what the counterparty structure costs in cash	

Kilmartin, year two	Figure
One agreement: currency and swap net	43,749,502
Two agreements	46,402,888
Difference, the swap's mark	2,653,387
Cushion after settlement: one agreement / two	13.9 / 6.5 per cent

Netting is worth something only when the marks have opposite signs. When rates fall with the currency, the two calls add and a single agreement provides no relief at all.

The symmetric stress pack

Chapter 15. Every hedged variable, up and down, valued separately before netting. If only the unpopular hedge is shocked, the pack is settling an argument, not sizing a facility.

Company		Prepared by	
Programme		Date	

Variable	-2 (200 bp / 20%)	-1 (100 bp / 5%)	Base	+1	+2	Netted?	Call at worst

Kilmartin: the swap	Mark	Call
-200 bp	-11,335,005	11,335,005
-100 bp	-5,575,603	5,575,603
+0 bp	-132,215	132,215
+100 bp	5,015,472	0
+200 bp	9,886,285	0

Point	Seen in our pack?	Note
What the rate table adds		
A fall of 200 bp calls 11,335,005, 31.49 per cent of available liquidity, from the instrument the pack does not stress		
Doubling the shock more than doubles the call: 183,799 more at 200 bp than twice 100		
The rate cut arrives when the business slows, the facility is under pressure, and the swap may outlive the debt it hedged		

Ask for the netted and the un-netted number side by side, always: the difference is the correlation between two markets, assumed to hold on the worst day.

The fact pattern, and the running order

Appendix and chapter 17. Kilmartin's inputs on one page, for rebuilding the programme, and the order in which the two questions get asked.

Company		Prepared by	
Programme		Date	

Item	Kilmartin	Yours
Revenue / EBITDA	340,000,000 / 44,200,000	
Dollar sales, share of revenue at spot	180,000,000 USD, 42.35 per cent	
Floating debt, swap notional, fixed rate paid	150,000,000; 120,000,000; 4.3850 per cent	
Cash + committed facility = available liquidity	11,000,000 + 25,000,000 = 36,000,000	
Spot; par curves at 1 to 5 years, GBP	1.2500; 3.85, 3.98, 4.12, 4.25, 4.36	
USD	5.05, 5.12, 5.21, 5.30, 5.38	
Share sold forward; bid and offer; credit charge	75 per cent; 8 pips; 11 bp	
Commodity; collar; volatility	26,000 t at 2,450; cap 2,680, floor 2,300; 24 per cent	
Collateral rate	15 bp below the unsecured curve	
Spot path t0 to t5	1.25, 1.19, 1.14, 1.175, 1.22, 1.26	
Floating path	3.85, 4.55, 5.20, 4.95, 4.30, 3.95	
Commodity path	2,450, 2,720, 2,910, 2,640, 2,480, 2,360	

The running order	Done
1. For each candidate tenor, the call at the design shock (10 per cent) against the facility actually drawable overnight	
2. Discard the tenors that do not fit	
3. Only then argue about the hedge ratio	
4. Only then compare results, on more than one path, including the one adverse to the company	

The proposal that arrives claiming to have removed uncertainty has moved it. Ask where.