Managing Market Risk – Case Study 1

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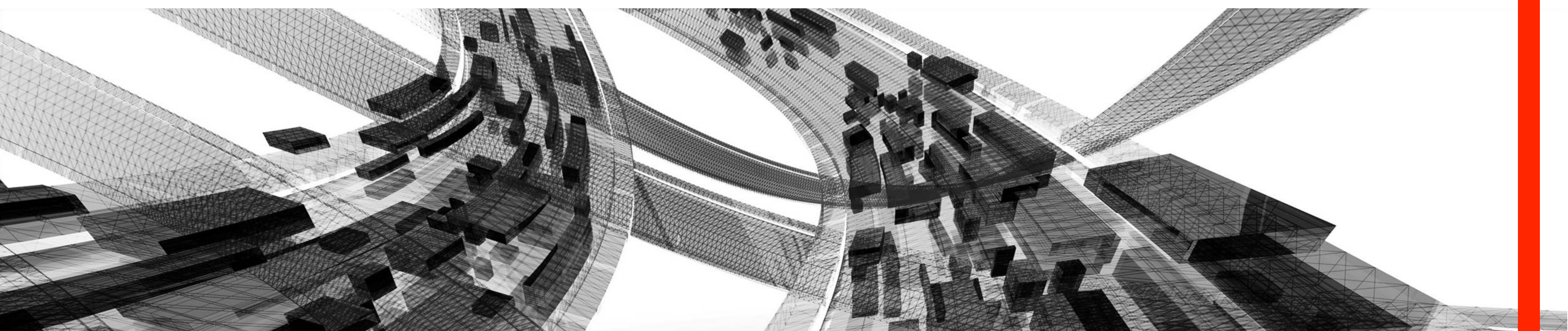

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Overview – Case Study 1 (Company ABC Ltd)

Interest rate exposure and hedging strategy considerations

Case Study Details:

ABC Ltd is a UK based manufacturer of electrical appliances. All company debt is financed through a multi banked Revolving Credit and Term Loan Facility. It current facilities, including interest rate hedging are due to mature in April 2014 and it is currently in negotiation with relationship banks to refinance.

Through increasing the level of drawn debt in the business, ABC Ltd must pay closer attention to it's RCF covenants, as well as an increased exposure to GBP interest rates

ABC Ltd 's treasury policy dictates that 50% of interest rate exposure should be hedged, but this has overridden in recent years due to the below rate environment.

Interest costs have the potential to increase significantly if GBP LIBOR rates rise, therefore ABC Ltd may consider hedging a portion of the new facilities – which can be done prior to, or after the proposed April 2014 refinance

ABC Ltd exposure to GBP interest rates

- ABC Ltd's total interest costs are composed of the loan margin and GBP 3Month LIBOR rate
- ABC Ltd are therefore exposed to increases in GBP LIBOR on any un-hedged debt
- GBP LIBOR is currently close to historic lows (3m LIBOR currently at 0.52%)
- Increased levels of debt in the business translate to increased exposure to potential spikes in LIBOR

Is now a good time to swap to fixed?

- Fixing a portion of debt removes the exposure to LIBOR and gives total certainty over future interest costs
- The current 5yr GBP swap rate is approximately 2.00%, which is low compared to historic averages, but represents a "cost of carry" in terms of day one interest cost in excess of current LIBOR
- However, recent significant movement higher GBP swap rates indicate that the market is already pricing in future rate increases
- Historic patterns suggest that swap rates increase steeply well ahead of the start of a Bank of England hiking cycle – therefore ABC Ltd should consider locking in fixed rates now, to avoid swap rates moving higher as rate hike expectations are brought forward

GBP Swap Market Update

Recent market trends in benchmark interest rates

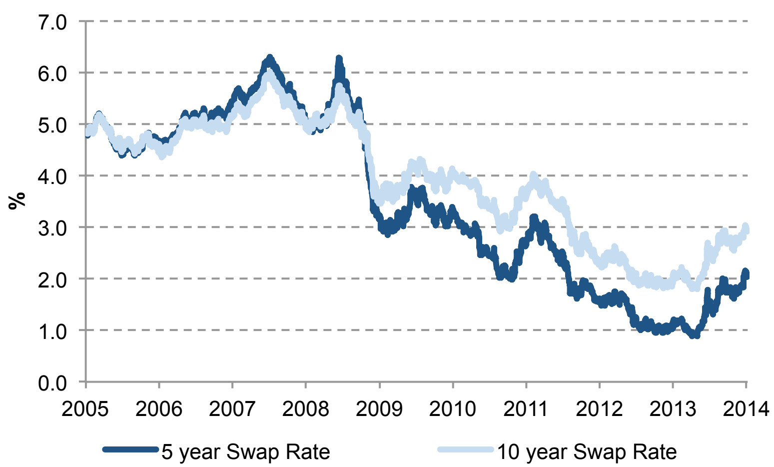
Following a prolonged period of buying in the Gilt market from 2011 to mid 2013 (during which underlying yields and swap rates fell to historic lows) rates have risen over the past 6 months

The GBP swap curve has steepened significantly over recent months in response to increasing expectations of rate hikes

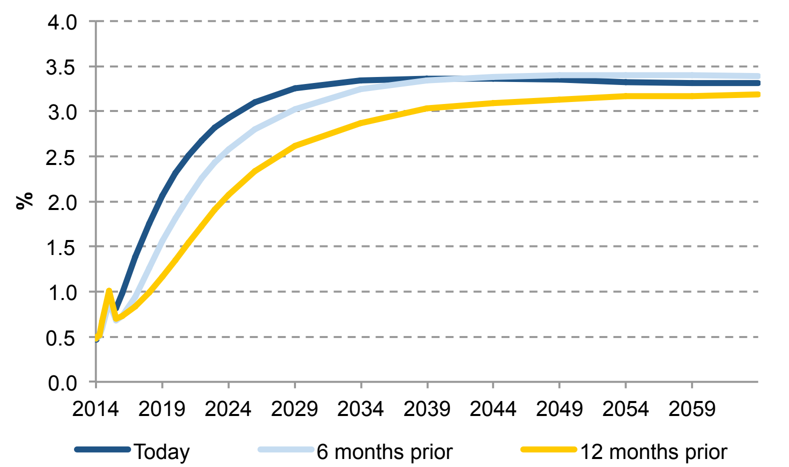
Rates moving higher following historic lows early in 2013

- Swap rates have risen across the curve over the past six months due to the improving economic outlook in the UK and US and a return of investor appetite for riskier investments, sparking some asset allocation away from 'safe haven' assets like Gilts and US treasuries
- The UK economy outperformed most of its European peers in 2013 with GDP growth of 1.4% and the recovery looks set to continue in 2014; driven by improving credit conditions, a recovery in the housing market and much higher consumer confidence
- To support the recovery, the Bank of England has said it does not intend to consider tightening monetary policy until unemployment has fallen below 7%. In August, the MPC thought this would take until H2 2016, but following strong data the BoE revised its unemployment forecast in November to show the headline rate falling faster in Q3 2015
- The GBP swap curve has steepened significantly over the past 12 months due to increased expectations of rising interest rates, particularly vs. G3 currencies due to dovish sentiment from the European Central Bank and Bank of Japan and uncertainty regarding the timing of the Federal Reserve's tapering programme

Historic 5 and 10 year swap rates



Recent movement on the GBP swap curve



Note: GBP swap rates reference 6m£:LIBOR vs. semi-annual fixed rate payments, both on an actual/365 fixed basis
Source: Bloomberg, HSBC Research

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GBP Swap Market Update
Looking Forward

Looking forward over the next 6 – 12 months, there are a number of data releases and "event risks" that could move the short to medium part of the swap curve

The GBP rates market is likely to remain highly sensitive to data releases and significant political and macro-economic events in the UK, US and Europe

Key Themes and Risks for 2014

- **BoE Rate Rises**
  - **Unemployment:** If unemployment reaches the BoE's 7% target earlier than their current expectation of Q3 2015 there are risks that rates may be raised earlier than expected; however the BoE have been at pains to emphasise that this threshold is not an automatic trigger and as such HSBC's economists do not predict rate rises before Q4 2015
  - **House Price Inflation**: The Financial Policy Committee ("FPC") has expressed concern with rapidly rising house prices, but for now will aim to reduce pressure in the housing market through macroprudential tools (including the exclusion of mortgage lending from the FLS scheme)

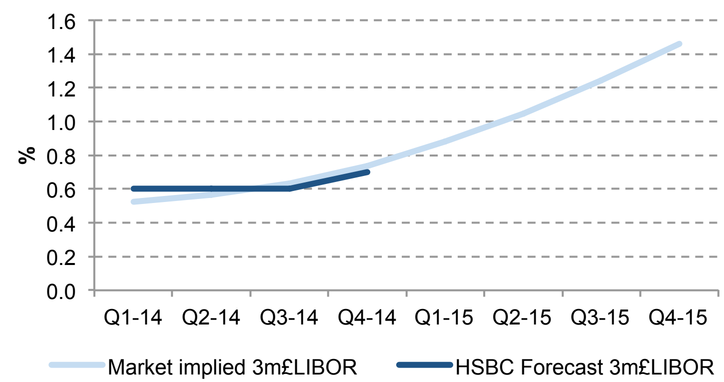
- **UK Inflation:** Continued strong growth, limited productive capacity in the economy and favourable credit conditions could lead to rising inflation, likely causing short terms rates to increase

- **UK Growth:** The recovery in economic growth looks set to continue in 2014 but export volumes remain poor due to weakness in the Eurozone and GBP strengthening

HSBC Research Forecasts

2014 forecasts % end period	Q1	Q2	Q3	Q4
Base Rate	0.50	0.50	0.50	0.50
3m GBP LIBOR	0.6	0.6	0.6	0.7
10 yr Gilt	2.6	2.7	2.7	2.8
UK GDP Growth (YoY)	2.8	2.7	2.5	2.4
CPI (YoY)	2.0	2.4	2.5	2.7

Market Implied vs. HSBC forecast 3m£LIBOR



Source: Bloomberg, HSBC Research

Quantifying sensitivity to interest rate risk

In the following two slides we will illustrate through statistical analysis how high 3m GBP LIBOR could be expected to rise over the next 5 years, and what impact this sort of increase could have on ABC Ltd's interest costs

Conclusions to draw from this chart are:

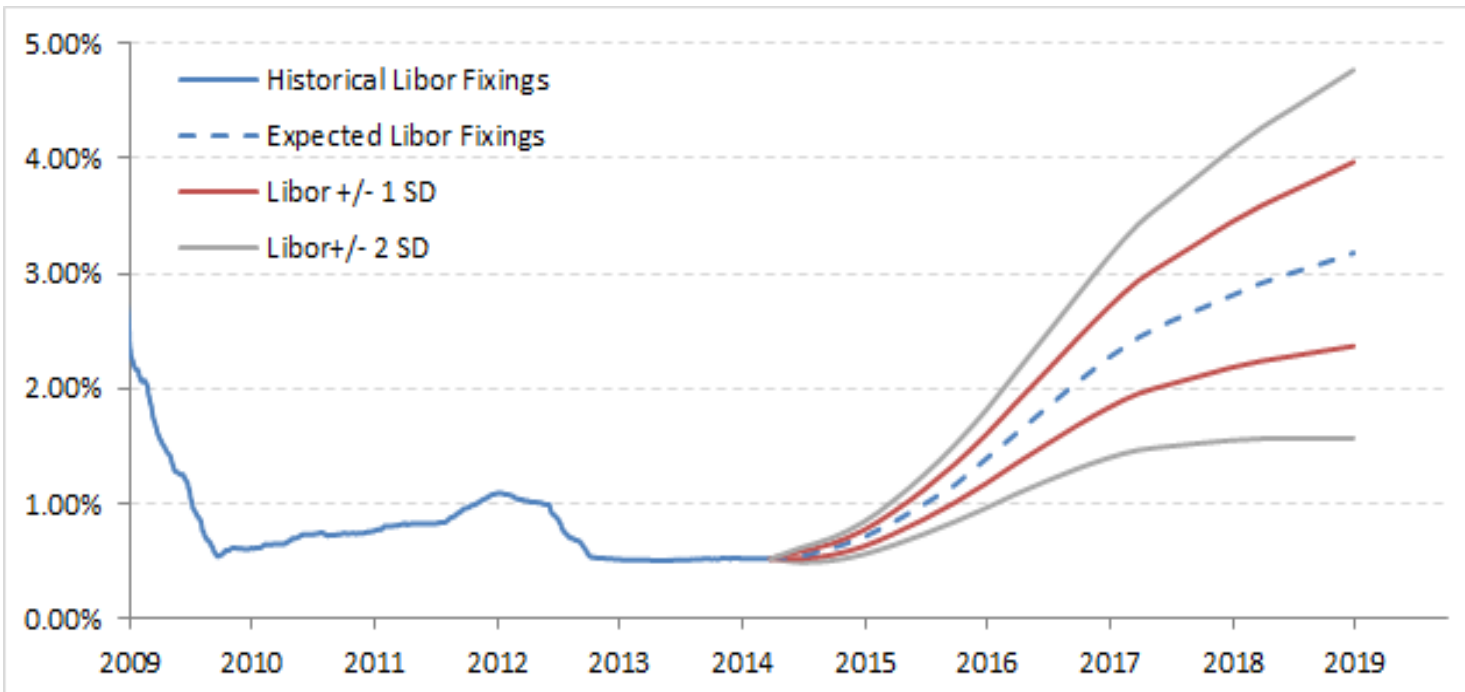
1. 3m GBP LIBOR is currently expected to rise significantly over the next five years, and
2. The degree of increase could be up to 200bps more than the implied fixings within a 2 standard deviation (95%) confidence interval

Source: HSBC, Bloomberg
Standard deviation analysis assumes 12% volatility, which is the average for 3m GBP LIBOR fixings over the last five years

How high could GBP LIBOR rise?

- ABC Ltd's interest cost is a product of two component parts: i) the loan margin, stipulated in the Facility Agreement, and ii) the GBP LIBOR fixing for each interest period
- If LIBOR rates rise, then so too do ABC Ltd's interest costs
- Using the market implied forward 3m GBP LIBOR rates, we have stressed these higher and lower by 1 and 2 standard deviations – which corresponds to 68% and 95% confidence intervals of the maximum and minimum levels 3m GBP LIBOR could be expected to relaise at
- For example, at the start of 2018 3m GBP LIBOR is expected to be around 2.80% (market implied), but when we stress this number by 2 standard deviations, we can say that we are 95% confident that the LIBOR fixing will not be greater than 4.1%, or lower than 1.55%

Stressed forward LIBOR fixings



Quantifying sensitivity to interest rate risk (cont’d)

The table and chart on this slide show the LIBOR element only of ABC Ltd’s total interest cost, based on £120m of drawn debt over 5 years

By stressing the forward LIBOR levels higher by 50bps and 100bps, we can quantify exactly what impact this would have on ABC Ltd’s interest costs, and therefore clearly demonstrate the quantum of risk ABC Ltd take by not hedging

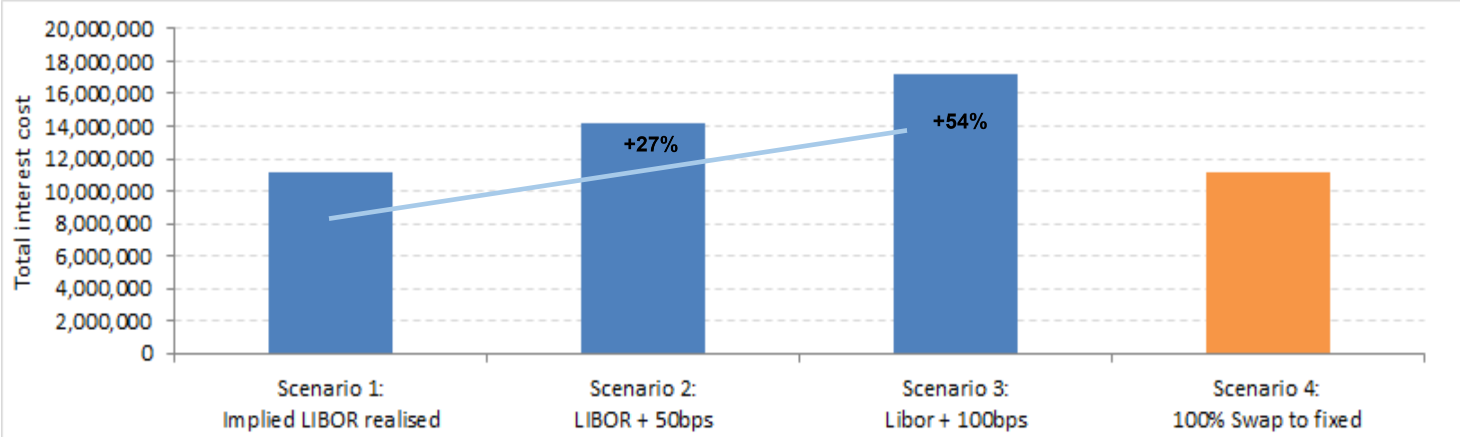
Exposure to the risk of LIBOR increasing above current expectations can be hedged by entering into a swap

Disadvantages:
If you wish to cancel the Swap during its lifetime, there may be a cost depending on prevailing market rates at the time
If interest rates fall, you are obliged to pay the agreed fixed rate which may be higher than the floating LIBOR rate

Impact of higher LIBOR rates on interest costs (Based on £120m drawn debt)

Year	GBP Flaoting rate debt	Market implied 3m GBP Libor	5yr GBP Swap Rate	Scenario 1: Implied LIBOR realised	Scenario 2: LIBOR + 50bps	Scenario 3: Libor + 100bps	Scenario 4: 100% Swap to fixed
2014	120,000,000	0.59%	1.86%	712,800	1,312,800	1,912,800	2,233,680
2015	120,000,000	1.09%	1.86%	1,313,550	1,913,550	2,513,550	2,233,680
2016	120,000,000	1.94%	1.86%	2,332,554	2,932,554	3,532,554	2,233,680
2017	120,000,000	2.63%	1.86%	3,158,754	3,758,754	4,358,754	2,233,680
2018	120,000,000	3.04%	1.86%	3,650,472	4,250,472	4,850,472	2,233,680
			Total	11,168,130	14,168,130	17,168,130	11,168,400

- If LIBOR realises 50bps higher than currently implied, this cost increases by **£3m**; and by **£6m** if LIBOR realises 100bps higher, <u>+27% and +54% respectively</u>
- If 100% fixed, all future interest costs are known on day one



Hedging interest rate risk using swaps

ABC Ltd can exchange a floating exposure linked to LIBOR for a fixed rate through an interest rate swap

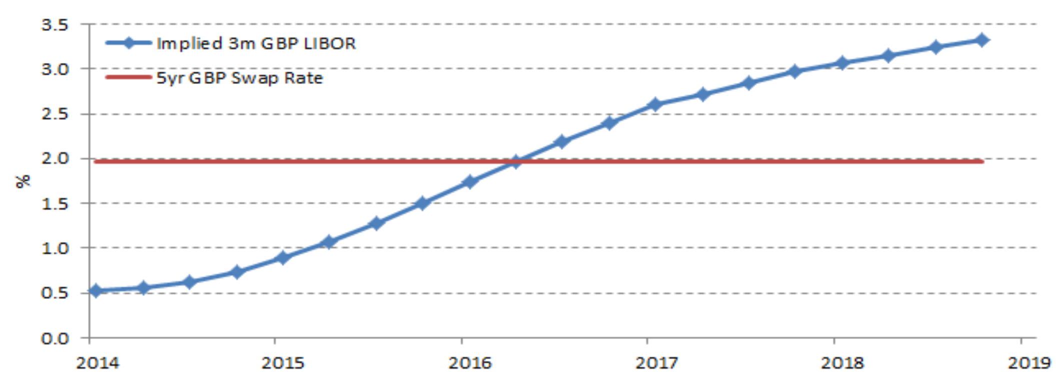
By entering into a swap, ABC Ltd agrees to exchange a series of cash flows with on an agreed notional and time frame

The swap fully eliminates ABC Ltd's exposure to unknown future LIBOR fixings

Mitigating exposure to floating GBP LIBOR through interest rate swaps

- In a swap, through receiving 3m GBP LIBOR and paying a fixed rate, ABC Ltd can synthetically transform a floating loan exposure into a fixed one, as show in the cash flow diagram below:

- The swap is structured to match the interest payment dates and any notional amortization under the bank facility
- Regardless of where LIBOR moves, ABC Ltd's interest costs remain fixed for the period of the hedge
- The price of an interest rate swap is the fixed rate at which the present value of the floating flows equals the present value of the fixed flows
  - Cash flows are discounted to today using current rates
  - As the floating flows are uncertain, market expectations of future 3m Libor fixings are used to determine the amounts



The chart illustrates current market implied forward GBP LIBOR levels and the equivalent fixed rate for a 5yr swap (bullet notional)

Source: HSBC

Alternative Hedging Strategies

There is a range of derivative products that CLIENT could use to hedge interest rate risk. While a swap is arguably the most straight-forward approach, products with optionality can offer increased flexibility

The obvious disadvantage of option products is that a cash premium is usually required

Option premiums are comparatively high at the moment due to increased volatility and uncertainty over the future path of Libor

CLIENT may wish to consider hedging part of their exposure with a swap and another part with an option

Product	Description	Key Advantages	Key Disadvantages
Cap	• The cap purchaser is compensated if rates rise above a predefined level (the strike); effectively establishing a maximum level of interest rates for your liability • There is no payoff when rates are below the strike	✓Establishes maximum interest rate payable ✓Allows for full benefit should rates remain low	×Requires payment of premium ×Uncertainty regarding cash flows remains (within a range below the strike)
Collar	• Combination of a purchased Cap and a sold Floor; establishing a known range of interest costs (max and min)	✓Establishes maximum interest rate payable ✓Selling a floor creates value – hence can be structured to be zero premium	×Limited benefit should rates remain low ×Limited value in selling floors due to upward sloping curve
Step-up Collar	• Cap and Floor strikes 'step up' periodically over the life of the hedge, approximately inline with the expected future path of Libor	✓Establishes maximum interest rate payable ✓A step-up floor creates more value than a static strike	×Significantly limited benefit should rates remain low
Knock-in Collar	• A Collar structure whereby CLIENT would be 'knocked in' to a higher floor level if rates fall below a certain trigger level	✓Establishes maximum interest rate payable ✓Sale of additional optionailty creates more value	×Potential to be knocked into a significantly higher interest rate if rates fall below trigger level

- **HSBC would welcome the opportunity to work with CLIENT to formulate a hedging strategy**

Market Hedge Coordination and Credit Auction

Process and Priorities

Appointing a single bank to act as Hedge Coordinator on any new interest rate hedging creates efficiencies in both market risk execution, as well the administrative side of the process

The Hedge Coordinator manages ABC Ltd's hedging process from start to finish, with responsibility for executing 100% of the market risk, as well as syndicating out the swaps among the banks that ABC Ltd chooses to face

It is therefore important that the Hedge Coordinating bank(s) are well rated and have the ability to face any of the other banks selected by ABC Ltd to hold a share of the swaps

Although this process is now well established in the European corporate market, it is important to select a Hedge Coordinator that has a proven track record of successful execution interest rate swap hedge coordination strategies

Hedge Coordinator Role

1	Arranging	Devising an appropriate hedging strategy and organising for the efficient execution and distribution of hedges
2	Documenting	Drafting term sheets and other hedge communications; ensuring adequate consultation with all involved parties
3	Pricing	Executing the market hedge allowing for uniform, smooth, transparent and tight pricing
4	Distributing	Efficiently syndicating the hedges to the banks selected to retain credit exposure and face ABC Ltd

ABC Ltd's Priorities

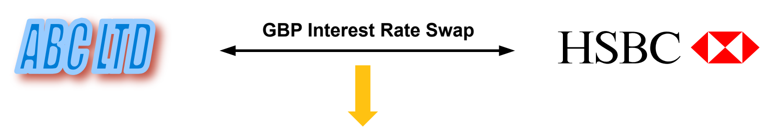
ABC Ltd's hedging strategy should be executed in order to achieve the optimal balance between the following key objectives:

1. Maintaining confidentiality thereby minimising leakage of information to the swaps market which could cause adverse price movements
2. Minimising price volatility through the execution process , ensuring a smooth and efficient execution
3. Ensuring price transparency and competitiveness

The role can broadly be divided into two key stages

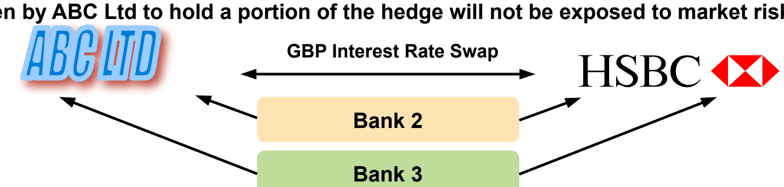
A – Market Hedge

- HSBC would fully manage all of the assorted inherent risks at the time of swap pricing, with the aim of putting ABC Ltd into its desired final hedged position via a swap on 100% of the hedged notional
- The hedging strategy will be devised in order to minimise adverse price movements, while ensuring price transparency and smooth and efficient execution



B – Credit Auction

- Following swap execution, and assuming that ABC Ltd would like to share the hedging with more than one bank, HSBC would provide term sheets to those banks that ABC Ltd selects, requesting confirmation of credit appetite as well as the credit spreads that these banks would charge
- HSBC would then provide ABC Ltd with a list of the credit pricing options available
- Lastly, those banks chosen by ABC Ltd to hold a portion of the hedge will not be exposed to market risk as HSBC will provide them with a market hedge



US Swap Market Update
Looking Forward

US Monetary policy is likely to be on autopilot this year, investors should then start to turn their attention to the outlook for policy once tapering ends in October

We expect the Fed to taper its QE asset purchases in steady USD10bn steps in 2014, with the final purchases in October

Lower-than-expected inflation finally triggered another 25bps cut in the refi rate to 0.25% in November

In 2014, a relatively slow domestic demand recovery is expected to keep downward pressure on wages, allowing inflation pressures, particularly in the services sector, to remain very subdued. We expect inflation to average just 1.0% in 2014

Key Themes and Risks for 2014

- **QE Tapering and Fed Funds Rate :** The FOMC has not actually committed itself to a regular schedule of USD10bn cuts in QE at each of the next seven policy meetings. The Committee's decisions about changes in the pace of asset purchases will be contingent on their outlook for the labor market and inflation.
- **Inflation:** The Eurozone inflation is set to remain low at less than 1% in 2014, and may face deflationary pressures. In the US, both consumer surveys and data derived from inflation-adjusted Treasury bonds suggest that inflation expectations are, indeed, quite stable currently. (Range 1.5% to 2% over the next 2 years)
- **Economic growth:** Eurozone GDP to expand just 0.8% in 2014 and 1% in 2015 and, with only very modest progress on rebalancing. The US economy is looking increasingly strong but there are still potential volatility points around tapering, key economic data and February's debt ceiling deadline.
- **ECB Action** The ECB has the option of tweaking the refi rate in the next month or two. They could also choose to have a slightly negative deposit rate, another LTRO, a small cut in the reserve requirement, end the SMP.

USD-HSBC Research Forecasts

2014 forecasts % end period	Q1	Q2	Q3	Q4
Base Rate	0-0.25	0-0.25	0-0.25	0-0.25
3m money	0.3	0.3	0.3	0.3
10 yr Treasury	2.7	2.3	2.1	2.1
US GDP Growth (Qtr Annualised)	1.5	2.3	2.4	2.5
CPI (YoY)	1.3	1.8	1.5	1.8

EUR-HSBC Research Forecasts

2014 forecasts % end period	Q1	Q2	Q3	Q4
Base Rate	0.25	0.25	0.25	0.25
3m money	0.2	0.2	0.2	0.2
10 yr	1.6	1.45	1.4	1.4
GDP Growth (YoY)	0.8	0.7	0.9	0.9
CPI (YoY)	0.7	0.8	0.6	0.9

Source: Bloomberg, HSBC Research

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