

£3.95 million Tailored Business Loan

A. Remit

This report addresses the Breakage Cost of £783,383 charged to Mr John Glare on 2 October 2009 (subsequently amended to £712,931 on 19 April 2010) for early termination on 14/09/09 of his £3.95 million Tailored Business Loan taken out on 14/02/08. This report is concerned solely with calculating the theoretical 'fair' value attributable to the market risk in the structure, which arises from an embedded 25 year amortising interest rate swap.

B. Why is there an interest rate swap embedded in a corporate loan?

Banks who lend to corporates fund their lending book by borrowing on a periodic basis (which may be monthly, quarterly, or any other chosen frequency) in the interbank market, at LIBOR + a spread. This funding is 'floating-rate', i.e. the cost of borrowing every period is simply the current market rate, which fluctuates randomly. If the bank then on-lends the funds to a corporate client also at floating-rate, there is no market risk incurred; however if the corporate loan is at a fixed-rate for the entire term of the loan, the bank incurs risk – in this case, the risk is that short-term market rates rise, potentially resulting in a loss for the bank.

The bank hedges by entering into an interest rate swap with a third party, the effect of which is to convert the fixed-rate loan into a (synthetic) floating rate loan. Now there is no mismatch with the bank's funding and therefore no risk to market movements. This process can be summarised as follows:

{receive fixed-rate} + (pay fixed / receive floating on a swap) = {receive floating-rate}

If a fixed-rate loan is terminated early, the bank has to cancel ("unwind") the interest rate swap with its counterparty. The swap will have a market value, and if that value is positive to the counterparty (which will be the case if interest rates have fallen) then the counterparty will require cash compensation for the unwind, in an amount equal to the market value of the swap. This cost incurred by the bank will properly be passed on to the corporate borrower.

This report addresses the correct unwind price of the swap embedded in the £3.95 million TBL taken out by Mr John Glare.

C. Methodology

- I have reconstructed the interest rate swap that the lender would have executed on the drawdown date (14/02/08) to hedge the market risk arising from the fixed-rate nature of the loan. This is a 25 year swap with an amortising notional (that matches the amortisation profile of the loan).
- I have derived discount curves from historical interest rate data (taken from Bloomberg) for both the drawdown date and the early-termination date
- With these curves I have calculated the theoretical fair cost of the unwind, and therefore the amount of Breakage Cost that can be attributed to the swap
- I cannot comment on any other early-termination charges levied by the lender that are included in the Breakage Cost quoted

D. Summary

I calculate that the fair breakage cost for the embedded interest rate swap was £416,643. There is a small level of uncertainty in this number, due primarily to the fact that I have used end-of-day interest rates, which may be slightly different to the actual live rates used at the moment of inception and at close-out. Typical intra-day volatility of rates is of the order of +/- 3 bps, which translates to a possible error of about +/- £15,000 in my valuation.

The cost charged to JG on 2 October 2009 was £783,383, subsequently revised downwards (in an email of 19 April 2010) to £712,931.

E. The specific questions that I was asked to answer

1. Swap rate used was 5.55% for a 25-year term

a. *Is this a fair rate on the day of execution?*

The 25 yr par rate was 4.92%; the par rate for this particular amortisation profile was 4.96%. The swap rate they quote (5.55%) looks like a rate with the VA added on.

b. *Were market rates rising or falling?*

They were falling

c. *How much did rates move around on the day of execution?*

Unfortunately this data is unavailable (Bloomberg only keeps intra-day data for 240 days).

d. *What is the likely market spread for NAB with another market counterparty?*

Typically 1-2 bps, but this was at the height of the crisis so maybe 2-3 bps

2. What is PV01?

PV01 is defined as the Present Value impact of changing the fixed rate on the transaction by 1bp. It is a function of (i) the level of interest rates, and (ii) the precise details of the transaction (in particular the amortisation profile).

a. *PV01 is started as £4,499 on this Trade*

I get £4,170

b. *How is this calculated?*

The PV01 is the present value of 1bp of interest, on the amortising principal profile, over the life of the deal. It therefore represents the sensitivity of the overall value of the trade to a 1bp incremental change in the fixed rate.

It is calculated by direct computation (1bp of interest on the principal, discounted back to the start date).

c. *What is the PV01 on the drawdown date?*

See above, £4,170

d. *Why is my answer different?*

Many possible reasons...

- The rate they used isn't the same as the end-of-day rates in Bloomberg
- Small differences in the construction of the discount curve
- Their PV01 looks like a vanilla 25yr number, not the true number which takes into account the amortisation profile

3. What is JG's Breakage Cost on 14/02/08?

Almost zero (just the PV of 2-3 bps spread mentioned above in 1.d.).

4. VA: what does this mean?

I don't know for certain, but best guess would be 'Value Added'. This is the spread (or more precisely the PV of the spread) added on by the lender so he can book some profit.

There is a base price for the loan (sometimes called the 'book open' price) at which the deal is breakeven to the lender - this will be [lender's own cost of funds] + [fair credit spread to cover default risk of the borrower] + [miscellaneous costs]. On top of that, the lender will add some further margin, this is the VA.

a. *How is it calculated?*

It isn't calculated, it is an input - the lender decides how much profit he wants to build in to the deal. I cannot comment on how NAB arrives at such a number.

b. *VA is stated as being £220,000 – how was this figure arrived at?*

See above. £220,000 corresponds to an incremental spread to the borrower of about 52 bps per annum.

- c. *Is it accurate?*
N/A
- d. *Is it reasonable given market conditions on the day of execution?*
I can't comment. It has nothing to do with market conditions on the day of execution.
- e. *How much profit will have been booked by the bank on this deal?*
I can't speculate on the precise numbers, but all-in it will be (i) the VA, plus (ii) the swap trader's bid-offer spread (maybe 2bp), and (iii) any spread to fair mid-market value in the quoted credit spread, less (iv) any costs.
- f. *If profit is not the correct term is contribution more suitable? Contribution to what?*
I think profit is fine (although the definition of 'profit' is somewhat ambiguous and subjective).
- g. *Where will the profit have been booked?*
I can't comment.
- h. *What Accounting Standards will have been used to book these deals?*
I can't comment, but undoubtedly market standard for the financial industry.
- i. *Do the Accounting Standards vary per operating unit?*
I can't comment, but I am sure the answer is no.

5. **With 23.5 years left to run, the TBL was broken**

- a. *What were swap rates for 23.5 years on 14/09/09?*
The fair rate for the amortising profile of this deal (using end-of-day data) was 4.00%
- b. *What were the movements of market rates on the day?*
Unavailable (see 1.c.).
- c. *What was the PV01 on the Breakage Date? What was the VA?*
The PV01 was £4,325. So given a VA-spread of around 52bp, this corresponds to a 'lost p&l' of around £225,000.
- d. *JG was charged £783,383 or £712,931. How were these figures arrived at? Are they accurate?*
I estimate that the theoretical cost of breaking the swap early was £416,643.
The all-in breakage cost will be the sum of (i) the cost of unwinding the swap hedge, and (ii) any other costs or charges applied by NAB for early termination of the loan. I can only comment on the former.

- e. *Do these amounts constitute a manifest 'overcharge' for breaking the swap contract?*
Yes, but as I stated above the all-in breakage cost will include other fees / charges / penalties levied by the lender. So you are not comparing like-for-like.
- f. *How are these charges accounted for in the bank's books?*
The same as any other cashflows arising from a commercial transaction. The bulk of it will go straight out to the swap counterparty as the unwind fee.
- g. *If there is a shortfall in realising the Counterparty's Security, who takes the hit? Treasury or Credit/Regional Office?*
I'm sorry, but i don't understand the question.
- h. *What happens to the Loss if the loan has been sold?*
Any loss on the swap arising before the loan was sold would be charged to the original borrower; subsequent losses would be charged to the new borrower.

6. Who supervises swap contracts?

- a. *In the interbank market?*
In various capacities, any or all of the Bank of England, the Financial Conduct Authority (FCA), the International Swap Dealers Association (ISDA), the Wholesale Markets Brokers Association (WMBA), the British Bankers Association (BBA), and the Prudential Regulation Authority. And quite probably a few more that I haven't thought of.
- b. *In the OTC Market?*
The interbank market IS an OTC market. I suspect your question is about any differences between the interbank market and the corporate customer world... in which case the answer is there is no difference (except that you can delete the WMBA and BBA from the list above).
- c. *Are there any differences in the contracts?*
Trades in the interbank market tend to be very standardised and 'vanilla'. Customer trades can be much more tailored and bespoke.
- d. *What are the means of redress amongst participants in these markets?*
If a derivative is terminated early, the party with the negative mark-to-market value on the deal makes a compensation payment to the party with the positive mark-to-market.
- e. *Is there a difference in accounting methods, rules and standards between the Treasury Dept and the Credit / Operating Unit executing the sale?*
I'm not really qualified to comment, but I'm sure the answer is no.
- f. *Do the accounting rules vary for each stage of the transaction?*
I'm not really qualified to comment, but I'm sure the answer is no.

g. Do the accounting rules vary for the different Operating Units?

I'm not really qualified to comment, but I'm sure the answer is no.

h. Is there any discretion over accounting for profits (at initiation) and losses / profits (at breakage) and Losses made on the realisation of the assets?

I don't really understand the question, and I'm not really qualified to comment even if I did.

7. Whilst booked as a Treasury transaction, the risk lies in the counterparty i.e. JG).

To be strictly accurate, the credit risk is with the borrower (JG); the market risk lies with the swap counterparty

a. How is this risk factored into the Treasury's decision to transact?

It is a commercial decision based on the perceived risk and the credit margin being earned for that risk.

b. How is the counterparty risk of SMEs monitored and controlled within Treasury?

I can't really comment, but in general terms controlling the risk is a function of (i) taking adequate reserves against default risk, (ii) loan acceleration terms (or any other credit-mitigation language) in the documentation, and (iii) active hedging if available (CDS).

c. If payments are missed by JG, are these losses made good by the Loans Dept or Regional Unit

I can't comment.

d. Are the payments under the swp made by JG guaranteed by the Loans Dept / Regional Unit?

JG is not making any payments on a swap, he is making payments on a fixed-rate loan. I cannot comment on any internal guarantor arrangements between different operating units within NAB.

e. If losses occur on the swap, who funds the losses if not JG?

Trading losses on the swap book are funded by the bank, they are just losses. Losses on the swap as a consequence of an early termination are properly funded by whoever is responsible, in this case the borrower (JG).