

## Credit Risk Adjusted Valuations

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The Global Financial Crisis has eroded the bottom lines of many organisations by reducing their earnings and causing significant devaluation of their assets. This crisis has demonstrated, often spectacularly, the serious effect of credit on the valuation process. In this article we focus on the impact of applying credit spreads in the determination of the fair value of financial instruments along with the potential flow on impact to IAS 39 hedge effectiveness and accounting.

The International Accounting Standards Board (IASB) is investigating the inclusion of credit risk in the valuation process and this is expected to result in a new International Financial Reporting Standard due in 2010. This standard is expected to closely align with the existing U.S. standard SFAS 157 on fair value measurements that expresses the concept of fair value in terms of exit price. Specifically, fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. This definition of fair value assumes that the measurement process takes into account non-performance risk, including either counterparty risk for asset positions or an organisation's own credit risk for liability positions.

Whilst the notion of using credit spreads in the valuation process is not new, the notion of using an organisation's own credit rating in the valuation of liabilities has created more controversy than any other aspect of fair value measurement. The major point of contention is that its inclusion can lead to completely counterintuitive results whereby the value of the liability improves with a deteriorating credit rating and deteriorates with an improving credit rating!

### **Fair Value of Derivatives**

During its life and depending upon market movements, a derivative contract can move from an in-the-money position to an out-of-the-money position and vice versa. This implies that at any given reporting date, a derivative could be classified as an asset and then, at a later date, the same derivative could be classified as a liability. Ordinarily such a reclassification does not pose a challenge. However, under the new definition of fair value, when the derivative is classified as an asset, the counterparty's credit spread has to be included and

when the same derivative is classified as a liability then the organisation's own credit spread has to be included when reporting the fair value.

What this specifically means is that the previously simple process of calculating the fair value of a financial instrument now has to follow the new procedure outlined below:

1. Find the mark-to-market value of the instrument using the flat market curve (i.e. not adjusted for credit spreads).
2. If the instrument value is positive then revalue the instrument using the counterparty's credit spread.
3. If the instrument value is negative then revalue the instrument using the organisations own credit spread.

### Example

To explain this methodology and the impact of credit spreads on valuation, let us consider the case of an exporter who has two existing Forward Exchange Contracts (FEC) for settlement on 31 March, 2010:

1. FEC #1 to sell USD1,000,000 @ 0.6800 and buy AUD 1,470,588 and
2. FEC #2 to sell USD1,000,000 @ 0.9000 and buy AUD 1,111,111

We wish to value the contract on June 30, 2009. On that date, the 9-month USD rate is 1.09%, the 9-month AUD rate is 3.39% and the spot rate is 0.80695.

To value the two contracts, we have to first calculate the net settlement amount (Table A) and then present value that amount (Table B). Applying interest rate parity, it follows that the 9-month USDAUD forward rate is 0.79345 and as such:

Table A: Net Settlement

	STEP 1	STEP 2	STEP 3
FEC #1	USD1M@0.6800 - USD1M@0.79345	AUD 1,470,588 - AUD 1,260,315	AUD 210,273
FEC #2	USD1M@0.9000 - USD1M@0.79345	AUD 1,111,111 - AUD 1,260,315	(AUD 149,204)

The market value of the FEC is given as the present value of the net settlement amount at maturity date, i.e. Market Value = Net Settlement X Discount Factor. However, what is the appropriate discount factor?

If we were valuing the FEC using the flat market curve, i.e. ignoring credit spreads then the answer to the above question is straightforward since the appropriate discount rate is the 9-month AUD zero rate i.e. 3.39%. Given that there are 274 days in the period from Jun 30, 2009 (value date) to March 31, 2010 (the settlement date) the discount factor is calculated as:

$$\text{Discount Factor} = \frac{1}{\left(1 + \frac{3.39\% \times 274}{365}\right)} = 0.97518332$$

The market value of the two contracts based on the flat curve is then:

Table B: Market Value

	STEP 4	STEP 5
FEC #1	AUD 210,273 x 0.97518332	AUD 205,055
FEC #2	(AUD 149,204) x 0.97518332	(AUD 145,501)

However if we want to incorporate the credit spreads in the valuation then the answer is not that simple and we have to use the methodology described previously. Let us suppose that on the valuation date the credit spread for the counterparty is 500 basis points (5.00%) and the credit spread for the organisation is 750 basis points (7.50%).

Since the first contract is in-the-money (an asset), the counterparty's credit spread has to be incorporated into the valuation, giving a discount rate of 3.39% + 5.00% = 8.39%. However, the second contract is out-of-the-money (a liability) and as such the organisation's own credit rating has to be taken into account giving a discount rate of 3.39% + 7.50% = 10.89%. It follows that:

Table C: Market Value with Credit Spread

	STEP 6	STEP 7 (Value with credit)	Value without credit
FEC #1	AUD 210,273 x 0.94074929	AUD 197,815	AUD 205,055
FEC #2	(AUD 149,204) x 0.9224836	(AUD 137,928)	(AUD 145,501)

It is clear from the above FX example that the inclusion of credit spreads in the valuation of instruments is to reduce the value of both assets and liabilities, which is not an intuitive outcome.

## Impact on Hedge Accounting

The inclusion of different credit spreads in valuation also has another unexpected and unwelcome impact when applied to hedge accounting. In normal circumstances, the hypothetical derivative in a cash flow hedge or the underlying hedged item in a fair value hedge is valued without incorporating credit spreads.

By applying differing spreads to assets and liabilities, this can result in an inherent mismatch between the changes in the value of the hedged item and the hedging instrument, which can cause a highly effective relationship to become ineffective and in some cases may even fail.

In the above example, suppose FEC #2, selling USD 1,000,000 @ 0.9000, is in a cash flow hedge relationship. Without any credit adjustments this relationship is 100% effective.

However on June 30 2009 the hypothetical derivative (without credit spread) has a value of (AUD 145,501) while the actual derivative (including credit spread) has a value of (AUD 137,928). On a dollar-offset basis, the relationship is now 95% effective when it was previously 100% effective.

## Conclusion

Many corporations and financial institutions are currently struggling to reassess their balance sheet valuations and cost structures for the new world paradigm which is emerging post GFC. This is not an easy task and for many this will now be significantly complicated by the compulsory introduction of these differing credit spreads into their valuations. As we have seen, in some instances where hedges have been deemed as 'highly effective' under IAS 39, this may no longer be quite as clear leading to unintended P&L volatility.

Corporations and financial institutions need to ensure that they are well prepared for dealing with the impact of credit with respect to the determination of fair values of their financial instruments. This means potentially investing in new processes or systems to make sure that they comply with both current and future requirements of any new International Financial Reporting Standards.

**Notes:** This paper is for information purposes only. You should refer to your auditors for clarification regarding the exact application of credit spreads in the valuation process.

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