



Credit mitigation and strategies with credit derivatives: exploring the default swap basis

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Agenda

- /// Credit default swaps and asset swaps: the basis
- /// Drivers of the basis
- /// Market observations and illustration
- /// Basis in practice
- /// Implications for market participants

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Asset-swap pricing

- /// A par asset swap typically combines the sale of an asset such as a fixed-rate corporate bond to a counterparty, at par and with no interest accrued, with an interest-rate swap.
- /// The coupon on the bond is paid in return for Libor, plus a spread: the asset-swap spread. The spread is a function of the credit risk of the underlying bond asset.
- /// As the spread is a function of credit risk, we could state with a certain logic that this spread is also the theoretical price for a credit default swap written on the same reference asset
- /// The basis for this can be shown using the no-arbitrage pricing principle, involving a basis-type trade constructed via a long position in the reference asset and a “short” (buy protection) position in the credit default swap – see Choudhry (2001) and Bomfim (2002).



The default swap basis

- /// For a number of reasons the credit default swap price will differ from the asset swap price for the same reference entity.
- /// This difference is the default swap **basis** and is:
 - credit default spread – the asset swap spread.
- /// A *positive* basis occurs when the credit derivative trades higher than the asset swap, and is common. A *negative* basis describes when the credit derivative trades tighter than the cash bond asset swap spread.
- /// A combination of factors drive the basis and can be grouped into “fundamental” and “technical” factors (Morgan Stanley 2002), also termed “contractual factors” and “market factors” (CSFB 2002).
- /// Negative basis is rare and tends not to last for too long: a bit like a “special” bond in repo – as factors that cause it reduce or go away, basis reverts to negative



Pricing differentials

/// Factors resulting in price differentials

A number of factors observed in the market serve to make the price of credit risk that has been established synthetically differ from that as traded in the cash market. Identifying (or predicting) such differences gives rise to arbitrage opportunities that may be exploited by basis trading across the markets. These include:

- /// **Bond identity:** the delivery option afforded the long swap holder in a physically-settled default swap. Also known as the “cheapest-to-deliver” option and delivery counterparty chooses the asset to deliver.
- /// **Special status:** the impact of the borrowing rate in the cash market for “special” stock
- /// **AAA stock trading below Libor:** cash market versus premium in CDS market
- /// **Risk exposure of default swap seller:** the payouts required on technical defaults (definition of credit event) that are not full defaults
- /// **Counterparty risk of default swap buyer:** unlike cash bondholder, the default swap buyer is exposed to counterparty risk during term of trade
- /// **Reference assets trading above or below par:** a CDS is a “par product” as it pays out par in credit event (“par minus credit event value or recovery value”). Greater risk for protection seller if asset below par in market (payout value).



Example illustration

- /// **Air Products and Chemicals 6.5% July 2007.**
- /// 18 January 2002, the asset-swap price for this bond to maturity was 41.6 bps.
- /// The CDS price to the same maturity was approximately 115 bps
- /// Using Bloomberg screens ASW and CDSW, we can see the source curves used in pricing the cash and synthetic markets
- /// On screen CDSW the user can select the generic discounted credit spreads model, or the JPMorgan Chase credit default swap pricing model.

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N172 Corp CDSW

CREDIT DEFAULT SWAP

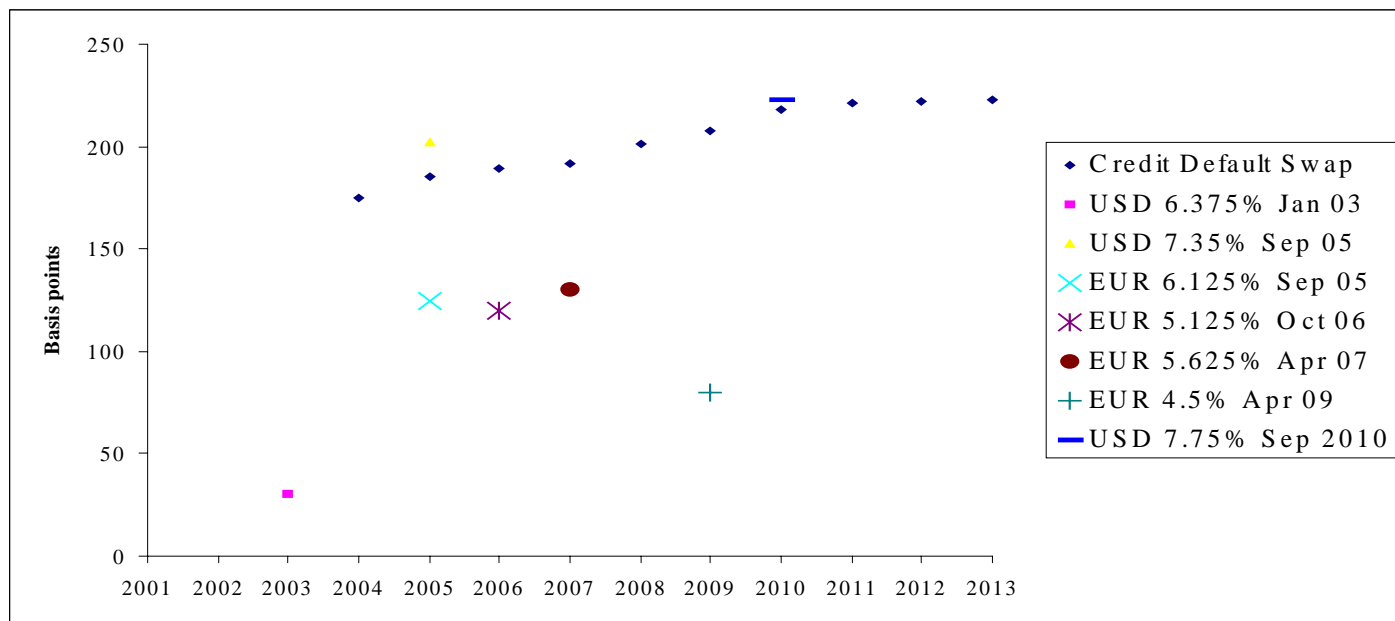
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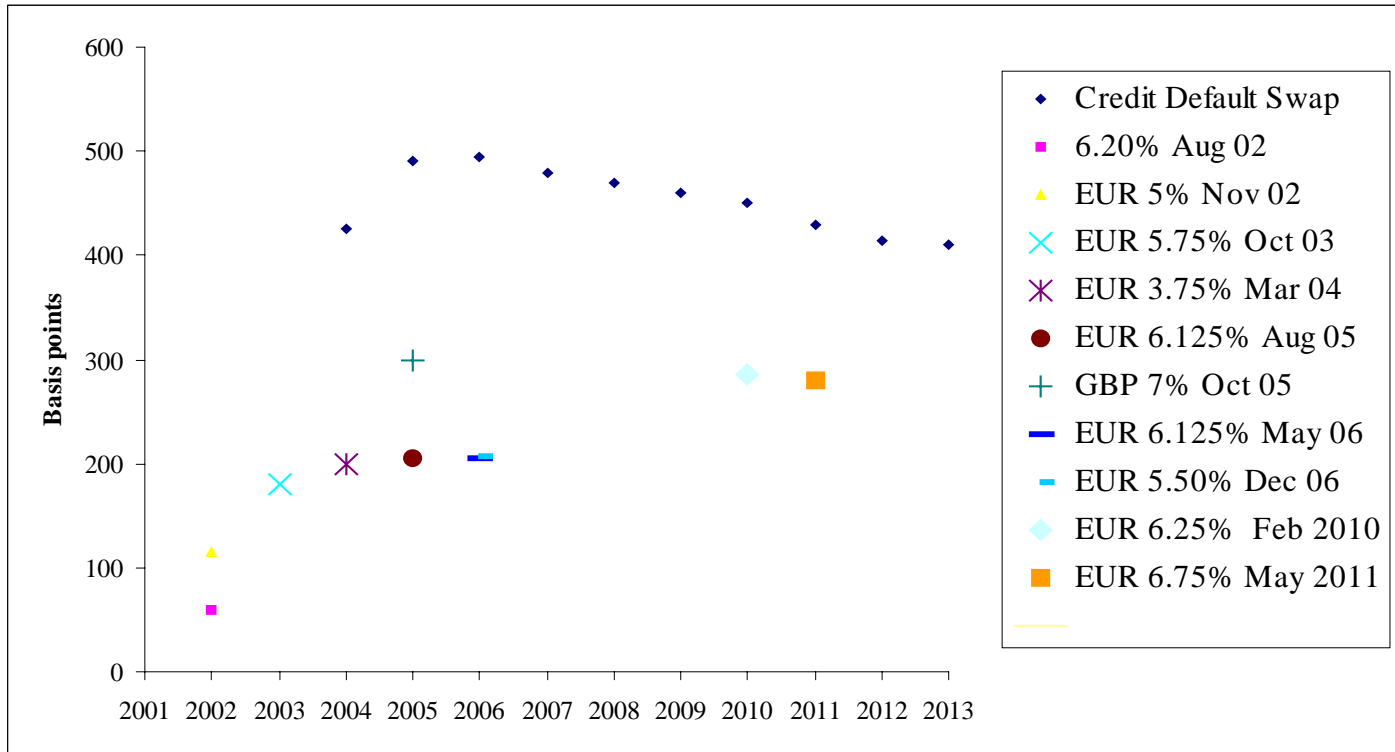
Market examples

- /// We illustrate the different trading levels by looking at two issuer names in the Euro-markets, Telefonica and FIAT. The graph shows the yield spread levels for a selection of US dollar and euro bonds issued by Telefonica, as at November 2002. We note that the credit default swap price is at levels comparable with the cheapest bond in the group, the 7.35% 2005 bond, issued in US dollars.



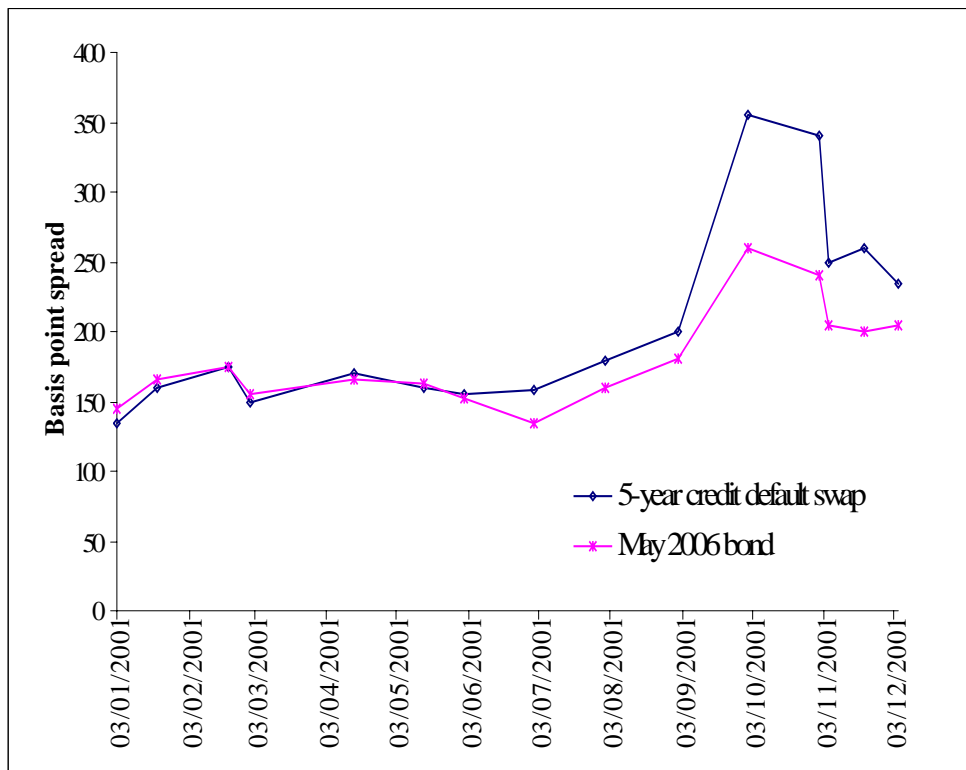


A similar picture emerges when looking at a group of FIAT bonds, also from November 2002. Note that the credit curve given by the credit default swap prices inverts. This is because a year earlier FIAT had issued a very large size “exchangeable” bond that had a July 2004 put date. The basis, previously flat, widened to over 100 basis points due to market makers hedging this bond with convertible bonds of the same name.



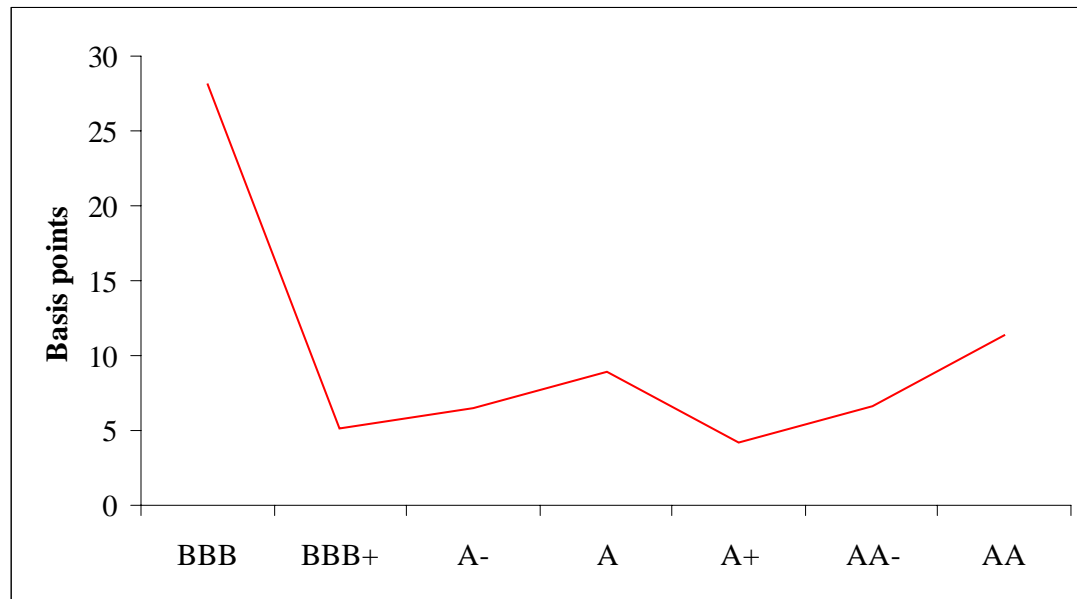
Market dynamics

The basis will fluctuate in line with market sentiment on the particular credit. For instance, for a worsening credit the basis can become positive quite quickly. This is illustrated in here which shows the widening in spread between the five-year credit default swap levels with the similar-maturity May 2006 bond of the same name (in this case, British Airways plc). The impact of the deteriorating business outlook in the last quarter of 2001 is prevalent, with the improving situation also illustrated towards the end of the year.



The basis smile

If plotted graphically, the basis tends to exhibit a smile. This is illustrated in Exhibit 5. The reason for this is that highly-rated reference names, such as AA or higher, fund in the asset swap market at sub-Libor. However if an entity is buying protection on such a name, it will pay above Libor premiums. The basis therefore tends to increase with better quality names and results in the smile effect. (Source: JPMorgan Nov 2002)





Assessing the basis in practice

- /// The basis for any specific reference entity at any one time will be a combination of all the stated factors, some pushing towards a positive and others towards a negative basis, and some cancelling other factors out. Consider therefore:
 - /// The cheapest-to-deliver option may carry greater value as we approach a possible credit event (the “strike price”)
 - /// As asset trades below par, affects CDS premium price and hence basis
 - /// Illiquidity in cash market: for instance if not possible to short bond in cash market may lead to greater volumes in CDS market, with impact on CDS spread
 - /// Market demand: for instance for deteriorating credit, demand for greater protection will push up premiums charged by protection sellers.
- /// The most important factor is relative credit quality of reference credit itself, which will mitigate impact of other factors.



Implications for strategy

- /// From market observation we can conclude:
 - /// As CDS market has become more liquid, as we saw earlier with i-r derivatives, CDS market leads cash market. If we plot historical patterns for a wide range of credits, the move tighter or wider has begun in CDS market and then to asset swap spreads.
 - /// There is high correlation between CDS and asset swap market, as we expect.
- /// For market participants then, possible approaches include:
 - /// The straight-forward basis trade, cash versus synthetic, that is credit risk-neutral and a basis play only (depending on view, long synthetic versus short cash or vice-versa).
 - /// The market sector trade: switch from low volatility and/or low spread basis reference into high volatility/spread. Eg., banks versus industrials
- /// We must remember that the relationship flows both ways and is highly correlated. Think of specials market in repo.....cash versus synthetic is closely related.



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