Morgan Stanley

Hedging Credit Valuation Adjustments

March 24 2009

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A simple list

- Why have a CVA? Why bilateral?
- Why hedge?
- Hedging for changes in the counterparty credit curve.
- Hedging for changes in the bank's credit curve.
- Hedging for changes in the markets affecting the underlying trade(s).
- Intuition around the hedges and some boundaries.
- What about margined names or names with no CDS market?

Why have a CVA? Why bilateral?

- Need to value the asset correctly.
- Simple example can replicate corporate bond cash flows which should be valued similarly to the bond.

- One can debate a firm's ability to hedge and/or realize the value implicit to bilateral pricing. However in the very least one needs to know what this value is to avoid being picked off in the market.
- People have also argued the potential funding benefit of the MNE but then one needs to add in the potential funding cost of the MPE. Accounting view of the world needs to catch up here. This feels very similar to where we were on bilateral pricing 5-6 years ago.

Why hedge?

- This seems like an odd question but it would appear that at least a few firms have chosen not to.
- In addition to lowering P&L volatility one can also put on appropriate hedges to influence the P&L impact of various scenarios: default, massive tightening, massive widening, rate moves etc
- Difficult if not close to impossible to do if there is no clear owner of the CVA and the hedges. This does not require a centralized owner just someone that owns the P&L for both sides of the part they own.

Hedging for changes in the counterparty credit curve

- Under an assumption of zero correlation between the underlying exposure and the counterparty credit this is not very difficult to calculate.
- This assumption allows one to separate the calculation of the exposure from the calculation of the incremental default probabilities which allows the calculation of full partials to be very quick.
- Generally one looks at a few scenarios and attempts to hedge these. Hedging for jump to default as well as parallel or relative shifts in the credit curve gets one fairly well hedged. Different hedging strategies will create different carry costs or gains.
- Can only hedge with what you can trade. May not have many tenor choices. Having partial info will at least help you understand what you should be trying to do.

Hedging for changes in the bank's credit curve

- The market unfortunately will not allow you to do the hedge you would like to do.
- One can attempt to sell protection on other banks but this can have very large basis risk as well as potentially career ending default risk.
- In this situation one is clearly not concerned with JTD risk but tenor choices can again influence carry.
- One may be able to sell forward starting protection by selling long tenor protection and buying short. If curve is inverted this can get expensive.

Hedging for changes in the markets affecting the underlying trade

- Approach here is generally the same for any exotics book priced via simulation.
- Start with primary: FX rate, parallel IR curve shifts, IR partials.
- IR partials can be interesting if one has things like forward starting swaps. In this case the partials may not add up to anything close to the parallel (large offsetting partials may not be possible due to floor).
- Stressing correlations and vols also desirable. Understanding cross risk is also desirable so one can re-hedge intraday.
- Credit products pose a whole new set of issues. Correlation is obviously much more of an issue. Need broad stresses but then difficult to identify hedge instruments to use. Fortunately the number of counterparties that matter here is fairly small.

Intuition around the hedges and some boundaries

- Default is imminent and Rec = 0
  - CVA = CE implies CVA hedging fully unwinds primary desk hedges
- Default is imminent and Rec ≠ 0
  - CVA = (1-R)×CE can't fully hedge yet due to changing recovery amount
- Default is less imminent and Rec ≠ 0
  - CVA = k × (1-R)×CE also need counterparty hedges for changes in k

What about margined names or names with no CDS market

- Trades done with a CSA under an ISDA presumably still require a CVA. The risk may be reduced but the reasons behind a CVA are still there.
- Difficult to hedge the primary drivers of this gap risk and sensitivities can be very unstable. If there are large thresholds involved then some hedging may by warranted.

- Names that don't have bonds or CDS also present challenges. May be able to hedge with a related name but basis is obviously an issue and if no related name may have no hope at all of hedging jump to default.