Derivatives Closeout Valuation: Challenges and Approaches

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Lehman Estate Suffered a $65 Billion Loss of Value According to Derivatives Claims

The loss arose from moving from mid-market valuations on Sep 12 to claims for replacement cost on Sep 15

- **Pre-bankruptcy**
  - OTC derivatives with positive value of ~$20 billion

- **September 15, 2008**
  - Chapter 11 bankruptcy filing

- **Derivatives Closeout**
  - Derivatives closeout claims of ~$45 billion against the Estate (negative value)
Closeout Amount and Loss Rely on the Commercial Reasonableness of Replacement Pricing

Examples of Products

• Liquid Products
  – Interest rate swaps
  – Single name CDS
  – Forex swaps
  – On-the-run indexes

• Inactive or Customized Products
  – Non-standard attachment point indexes
  – CDS on single name non-Agency RMBS
  – TARNs
  – Digital options
  – Auto receivables index

• Extraordinary Market Circumstances
  – Canadian ABCP
  – Icelandic bank CDS
  – TRS with underlying loans that had no bid

Issues in Valuation

• Liquid Products
  – Netting
  – Position size
  – Credit Valuation Adjustment
  – Counterparty access to market

• Inactive or Customized Products
  – Valuation methodologies consistent with market practice
  – Reasonable assumptions that would have been made contemporaneously
  – Cost of hedging

• Extraordinary Market Circumstances
  – Contractual stays
  – Valuation anomalies
Marketable Products

The Derivatives Claims Settlement Framework (i.e., the ‘Lehman Framework’) attempts to arrive at a commercially reasonable result for liquid products

Find the net risk position, price at mid market and adjust for replacement costs for two offsetting corporate credit default swaps on the same reference entity

<table>
<thead>
<tr>
<th>Trade</th>
<th>Notional ($)</th>
<th>Fixed Rate (bp)</th>
<th>Maturity</th>
<th>Mid-market value ($)</th>
<th>CR01 ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>500,000,000</td>
<td>285</td>
<td>3/20/2012</td>
<td>1,496,076</td>
<td>151,662</td>
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<tr>
<td>2</td>
<td>-200,000,000</td>
<td>280</td>
<td>6/20/2012</td>
<td>-1,072,507</td>
<td>-64,159</td>
</tr>
<tr>
<td>Total</td>
<td>300,000,000</td>
<td></td>
<td></td>
<td>423,569</td>
<td>87,503</td>
</tr>
</tbody>
</table>

$0.4 mid-market value + $1.1 delta add-on + $3.1 million size adjustment = $4.6 million total
For Less Liquid or Large Size Positions, An Alternative Approach May be Necessary

- Only willing to offer 40% of position size
- No offers from Broker Dealer 2, Broker Dealer 3 or Broker Dealer 4
**Inactive Products**

**Digital Yield Curve Slope Option**

**The Cost of Hedging: the Shark Fin**

Digital option hedged by buying a low strike call and selling a high strike call (i.e., call spread). Depending on available call strikes, may require larger notional call spread than original digital option.
Extraordinary Market Circumstances: 17 Month Standstill
Total Return Swap Valuation in a CDO Structure
$300 Million Dispute in a Canadian Court

Without an intermediate stop-loss, noteholders would have been wiped out as of January 2009.

The standstill prevented a 50% market value stop-loss, which would have allowed noteholders to recover 50% of their principal, from being triggered.
Determining Commercially Reasonable Closeout Amounts Requires Market Judgment

- Valuation of less liquid and/or large size transactions is much more nuanced than putting numbers in a model

- Real world practical knowledge and perspective as well as sophisticated analytics are needed

- Mid market “marks” are of limited value in assessing “replacement” levels, especially in stressed markets