Global Structured Credit Products
The Way Forward

September 2007

Michael Raynes
Overview of Recent Market Developments

- CDO Market has come under significant assault this year prompted by an unprecedented fall in value of its largest asset class - subprime mortgages

- Although not initially anticipated, the anxiety about one asset class resulted in widespread contagion to other asset classes
  - CLOs
  - Credit markets in general

- Leveraged loans and subprime mortgages were historically the 2 largest asset classes in CDOs.

- The CDO market (and more broadly structured credit) had developed as its own distinct market. In early 2007 investors focused sharply on the performance of the underlying CDO collateral.

- The fallout: the price and new issuance of all CDOs was severely impacted – no new issuance of CDOs backed by ABS and a liquidity freeze on existing inventory

- The most significant deterioration in investor appetite is in CDO products with subprime mortgage exposure, especially 2006 and 2007 vintages
Development of CDO Market

• The CDO market developed with a capital markets and balance sheet business model
  – Underwriters warehoused collateral assets and distributed CDO liabilities and equity at the time of deal execution

• Citi's balance sheet was historically an important part of our CDO business model
  – Desk would takedown selected parts of the capital structure, e.g. super senior at the same time as deal execution (pricing of debt and equity)
  – The super senior was either fully hedged (typically through the purchase of monoline protection) or left on the balance sheet

• Distribution of CDO debt and equity had fundamentally been one of Citi's strongest attributes

• Aside from the super senior, Citi's CDO business – prior to the subprime fallout – had limited inventory
Citi has always been a leader in the CDO market

2007 1Q-2Q league table: Global CDO underwriting

<table>
<thead>
<tr>
<th>BOOKRUNNER</th>
<th>PROCEEDS (US $ BILLION EQUIVALENT)</th>
<th>MARKET SHARE</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citi</td>
<td>$37.5</td>
<td>14.6%</td>
<td>1</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>$34.7</td>
<td>13.5%</td>
<td>2</td>
</tr>
<tr>
<td>Banc of America</td>
<td>$20.7</td>
<td>8.1%</td>
<td>3</td>
</tr>
<tr>
<td>UBS</td>
<td>$18.8</td>
<td>7.3%</td>
<td>4</td>
</tr>
<tr>
<td>Wachovia</td>
<td>$17.0</td>
<td>6.6%</td>
<td>5</td>
</tr>
</tbody>
</table>

- Through the second quarter of 2007 Citigroup has increased market share over 2006

Developments in Structured Credit at Citi

- Prior to June 2006 Structured Credit Products was managed in silos
  - Cash versus synthetic
  - New York versus London
  - Capital markets versus trading

- Over the past 12 months the business model was significantly revamped
  - Restructure business to integrate origination and syndication of 3rd party managed CDO business across all asset classes and Cash and Synthetics
  - Increase Senior Management of Structured Credit business out of London
  - Enhance on-desk risk management across 3 principal risk businesses (Correlation, CDOs, and Illiquids)
  - Diversify revenue base into alternative sources of income – structured illiquid credit financing
  - Create a new global derivatives structuring effort focusing on product innovation and derivatives strategy for fixed income client base
Global Structured Credit Products – Current Organizational Chart

Total committed heads: 200
Total MD heads: 16
Revenue Trend in GSCP

- Significant expansion of non-CDO business
- Focus on credit correlation
- Introduction of illiquids
- Emphasis on Europe
Revenue Trend in GSCP

- Significant expansion of non-CDO business
- Focus on credit correlation
- Introduction of Illiquids
- Emphasis on Europe

![Revenue Trend in GSCP Graph]

- Other
- Illiquid Credit
- Secondary CDO
- Credit Correlation
- ABS Correlation
- Cash CDO
Analysis of "What Went Wrong" and Proposed Strategic Changes

- Significant dependence on distribution as proxy hedge to warehoused assets
- Unprepared for draconian meltdown scenario with respect to largest collateral asset class; risk limits too high
- Utilized balance sheet – specifically on super senior – without a defined hedging strategy, but within risk limits
- ABS Correlation not run as a "true correlation" business, but rather as a synthetic CDO business. This increased our overall exposure to impaired underlying assets class.
- Lumpy income stream; not well-diversified

- Active risk management of "long assets", including warehoused assets
- Change in traditional CDO business model with respect to warehousing and counterparty risk
- Price super senior at market clearing levels, distribute whenever possible, and work to broaden investor base
- Originate new assets, i.e. super senior, into a non-MTM book, if held
- Fold ABS Correlation into Credit Correlation, while managing legacy positions in conjunction with GSM
- Strategic attack on market opportunities as a result of severe dislocation
How will the “traditional” CDO business model evolve

Current Citi Standard

- Warehouse duration varies by deal and manager
- “First loss” amounts borne by asset manager varies; in most CLO transactions the manager takes the first loss risk
- Deal fees are earned only if transaction is consummated
- NO MTM trigger-event during warehouse period
- Warehouse risk marked-to-market, but not actively hedged and monitored
- Strategy has been to diversify asset classes, which currently include loans, ABS, EM, TRUPS
- Current warehouse risk limits set by rating
- Limited counterparty risk management

Proposed New Citi Standard

- Limit warehouse period to 6 months
- Manage “first loss” amounts which will vary by asset class
- Migrate to a TRS model for CLO warehouses – MTM and collateral calls – if no capital contributed. Citi retain unilateral “blowout” clause
- Credit losses are unlikely (esp with 6 month term). Hedging should focus on mitigating MTM risk, which includes the risk of the inability to execute a take-out transaction
- Limit warehouses for illiquid assets. If feasible, provide warehouse terms based on a recourse basis to creditworthy counterparts. Focus on financing trades
- Warehouse risk limits by asset type, not rating
- Open warehouses
Where will the "alpha opportunities" be in the next 6-12 months?

- Distressed sellers looking to offload cheap assets that offer relative value
- Repacks of existing trades with clients whereby we can extract value from switches
- Increased margins in credit correlation trades due to wider market environment and increased appetite by investors for bespoke trades, due to decreased volume of traditional CDOs
- Increased margins on structured financings utilizing balance sheet and intellectual capital
- Applying recently executed trades for Citi balance sheet, as well as for other financial institutions
- Re-emergence of better structured CDO opportunities - finding higher fee potential given dislocation and potential competitor shifts
# Sources of Revenue

## 2006 Revenue

<table>
<thead>
<tr>
<th>HC</th>
<th>Business</th>
<th># deals</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDO</td>
<td>26</td>
<td>220</td>
</tr>
<tr>
<td>33</td>
<td>ABS/CRE</td>
<td>26</td>
<td>220</td>
</tr>
<tr>
<td>32</td>
<td>Loans</td>
<td>20</td>
<td>175</td>
</tr>
<tr>
<td>5</td>
<td>Other/Asia</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Secondary Trading Flow</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Distressed</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Correlation</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>TRS Portfolio</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Illiquids Financing</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>GPO</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>&quot;Exotics&quot;</td>
<td>25</td>
<td>53</td>
</tr>
<tr>
<td>5</td>
<td>Other</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL** 156 768

## 2008 Revenue

<table>
<thead>
<tr>
<th>HC</th>
<th>Business</th>
<th># deals</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loans</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>ABS/CRE/EM</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Secondary Trading Flow</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Distressed</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TRS Portfolio</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Illiquids Financing</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GPO</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL** 670
Proposed Revenue Analysis Drill Down – Moving Forward

- Real money client bespoke correlation trades
- Fast money bespoke correlation trades
- Flow index trading
- Risk management/prop trading
- Loan portfolio-related activities

- Portfolio TRS

- Basis Trading
  - Origination/Structuring Fees
  - Repackaging, Retrenching and Syndicating
  - Contingent credit and X-Market Trading/Lending

- Syndicated synthetic managed and managed trades, FTD, and other exotics
- Capture bid/offer from hedge fund/prop desk flow
- Index tranches
- Index arbitrage, correlation views, optimizing reserves
- Capital optimizing loan portfolio trades

- Market value financing focused on first lien leveraged loans
- Incorporation of risk mitigation triggers based on portfolio price dynamics
- Macro hedging via execution of bespoke correlation transactions on retained senior risk

- Long cash position and short derivative position in same asset which results in positive carry
- Success based fees paid on trades executed in partnership with DCM or IBD
- Using cash and/or derivatives technology to create non-directional basis positions
- Trading credit linked or indexed to rates, commodity and/or currency risk.
Global Structured Credit Products – Proposed Organizational Structure

Potential dislocated seniors:

- Global Structured Credit Products
  - Global Structuring, Execution, and Distribution
    - Deal Execution & Distribution
    - Dash & Synthetic Structuring
    - European CDOs
    - Asia Pac CDOs
  - Global Trading and Risk Management
    - Global Risk Management
    - CDO Secondary Trading Risk / Management of Unsold Inventory
    - Correlation Trading Risk
    - Warehouse Risk
    - Portfolio TRS Risk
    - Quantitative Analysis
  - Global Illiquid Credit Trading
    - Illiquid Financing
    - Negative Basis Trades and Repack
    - Portfolio Optimization (GPO)

Total Committed Heads:
Total MDs:
ALL OUT AFTER THIS
Market Opportunities Going Forward: Correlation

- Two fundamental activities
  - An asset transformation activity
  - A trading activity

- Short term opportunities

- Longer term opportunities
Citi has always been a leader in the CDO market

### 2005 CDO League Table

<table>
<thead>
<tr>
<th>Arranger</th>
<th>Notional Issued ($MM)</th>
<th>Market Share (%)</th>
<th>2005 Rank</th>
<th>2004 Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citigroup</td>
<td>29,569</td>
<td>16.8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>27,175</td>
<td>15.2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Wachovia Corp</td>
<td>19,220</td>
<td>10.7</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bear Stearns</td>
<td>12,480</td>
<td>7.0</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>10,903</td>
<td>6.1</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>10,726</td>
<td>6.0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>UBS</td>
<td>10,522</td>
<td>5.9</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Banc of America</td>
<td>10,029</td>
<td>5.6</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>CSFB</td>
<td>9,170</td>
<td>5.1</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>JP Morgan</td>
<td>8,496</td>
<td>4.7</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>30,369</td>
<td>16.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>178,059</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Citigroup and Merrill Lynch are the two dominant players in the CDO market with 16.8% and 15.2% market share respectively
- In 2005, Citigroup was the leader in both ABS and CLO businesses
- Citigroup has a more balanced CDO business than its competitors
- Citigroup was selected by IFR as U.S. CDO House of the Year in 2004

### 2005 ABS CDO League Table

<table>
<thead>
<tr>
<th>Arranger</th>
<th>Notional Issued ($MM)</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Citigroup</td>
<td>15,866</td>
<td>16.3</td>
</tr>
<tr>
<td>2. Merrill Lynch</td>
<td>15,121</td>
<td>17.4</td>
</tr>
<tr>
<td>3. Wachovia</td>
<td>11,749</td>
<td>13.5</td>
</tr>
<tr>
<td>4. UBS</td>
<td>7,854</td>
<td>9.1</td>
</tr>
<tr>
<td>5. Deutsche Bank</td>
<td>6,956</td>
<td>6.0</td>
</tr>
<tr>
<td>6. Other</td>
<td>29,143</td>
<td>33.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>86,721</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### 2005 CLO League Table

<table>
<thead>
<tr>
<th>Arranger</th>
<th>Notional Issued ($MM)</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Citigroup</td>
<td>11,327</td>
<td>17.1</td>
</tr>
<tr>
<td>2. Bear Stearns</td>
<td>6,930</td>
<td>10.5</td>
</tr>
<tr>
<td>3. JP Morgan</td>
<td>6,399</td>
<td>9.7</td>
</tr>
<tr>
<td>4. CSFB</td>
<td>5,804</td>
<td>8.8</td>
</tr>
<tr>
<td>5. Wachovia</td>
<td>5,803</td>
<td>8.8</td>
</tr>
<tr>
<td>6. Other</td>
<td>29,985</td>
<td>45.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>66,260</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Thomson Financial B12d League Tables
Proposed Revenue Analysis Drill Down – Moving Forward

- CDO
- Secondary Trading
- Correlation
- TRS
- Illiquids
Market Opportunities Going Forward: Illiquids Asset Trading

- The cornerstone of the SICT strategy is the reformulation of Illiquid Assets Trading as the proprietary investment arm of structured credit products

- Recent credit market turmoil has demonstrated the value proposition of Illiquid Assets Trading
  - Reduced capital capacity and market liquidity
  - Disinformation and confusion related to asset pools and structure
  - Typical investor base sidelined by portfolio concerns

- Illiquid Assets Trading is able to structure financing solutions for key Citigroup clients in situations where financing needs remain but traditional markets are closed or failing

- Illiquid Assets Trading seeks to unite SICT's established platform with broader client strategies at Citigroup
  - Experienced investment team backed by principal capital
  - Flexible, appropriate, and creative solutions
  - Responsive to time-sensitive solutions
  - Comprehensive global structuring and risk platform
<table>
<thead>
<tr>
<th>RISK POSITION</th>
<th>AMOUNT</th>
<th>DESCRIPTION</th>
<th>STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS Super Senior Mezz/CDO High Grade</td>
<td>$10Bln</td>
<td>Unhedged super senior tranches taken down from cash and synthetic transactions.</td>
<td>MTM using intrinsic analysis</td>
</tr>
<tr>
<td></td>
<td>$8Bln</td>
<td>Currently no trading in CDO securities backed by subprime collateral.</td>
<td>Create a structure to bifurcate super senior risk into equity and high grade.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This permits GSCP to place SS exposure into SPE and obtain accrual treatment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sell equity into market.</td>
</tr>
<tr>
<td>Liquidity Puts</td>
<td>$24.5Bln</td>
<td>Contingent backstop to CP that permits investor to “put” CP back to Citi when certain criteria are met.</td>
<td>Continue to hold CP in position under the assumption that the market will normalize.</td>
</tr>
<tr>
<td>ABS CDO Cash Inventory</td>
<td>$2.3Bln (MV)</td>
<td>Unsold CDO securities backed by subprime collateral.</td>
<td>Opportunistic sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refine intrinsic analysis for use with investors to facilitate new trades.</td>
</tr>
<tr>
<td>ABS CDO Warehouse</td>
<td>$0.9Bln (MV)</td>
<td>RMBS backed by subprime mortgage collateral</td>
<td>All warehouse collateral targeted for TAMCO transaction which is targeted for October close.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EXCL expected to take top of capital structure (36-100)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CDS on ABS referencing RMBS backed by subprime mortgage collateral.</td>
<td>Equity not yet sold</td>
</tr>
<tr>
<td>ABS Correlation longs</td>
<td>$1.5B / $0.75B (notl) / (MV)</td>
<td>BBB single name RMBS backed by subprime collateral.</td>
<td>Proxy hedge with ABX and Corp indices until liquidity in the single name market returns</td>
</tr>
<tr>
<td>Loan CDO Warehouses</td>
<td>$6.0Bln (MV)</td>
<td>24 open warehouses - 13 in NY and 11 in LDN</td>
<td>Execute transactions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Restructure deals to enhance execution as required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Buy protection on warehouses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Execute strategic trades - Sankaty &amp; Norinchukin</td>
</tr>
</tbody>
</table>
Business Organization

Mark Watson
Co-Head of Credit Markets
London

Chad Leat
Co-Head of Credit Markets
New York

Michael Raynes
Head of Global Structured
Credit Products
New York

Nestor Dominguez
Janice Warne
Co-Heads of Global CDOs
Co-Heads of Global Structuring
New York

Mickey Bhatia
Head of Global Credit
Correlation Trading
London

Chris German
Head of Global ABS
Correlation Trading
London

Michael Jinn
Head of Global Illiquid
Credit Trading
London

Business is managed on a global basis, with a number of business heads based in London.
Proposed Revenue Analysis Drill Down – Moving Forward