SUBPRIME...
Impacts for capital assessment

TERRY MASTERS  terry.masters@aon.co.uk
JIM RILEY  jim.riley@aon.co.uk
MARK FLOWER  mark.flower@aon.co.uk
GILLIAN JAMES  gillian.james@aon.co.uk

GIRO XXXV – September 2008, Sorrento
Interesting numbers - Banks

- Fannie Mae / Freddie Mac
  - Recently placed in conservatorship under FHFA
  - Own or guarantee 50% US $12,000b mortgage market

- 13 FDIC banks have failed since July 2007
  - 26 during Jan 2001-Jul 2007
  - 117 banks on FDIC “problem lenders” list
  - Predictions of 300 banks failing by 2011

- Lehman Bros had 158 year history, 1850-2008
  - Had weathered two World Wars and the Great Depression

- Several high-profile rescues of failing banks
  - Bear Stearns, Northern Rock, Countrywide, Washington Mutual, Merrill Lynch
Interesting numbers - Banks

- 100 security class actions (39 in ’07, 61 in ’08)

- Auction rate securities:
  - SEC investigating 20 banks
  - 5 banks already agreed to repurchase $47b of ARS

- Write-downs exceed $500b to date
  - Predicted to reach $1,000 – 2,000b
Aside from Banks.....

- Bond Insurers (“Monolines”)
  - Ambac $1.5bn in new capital plus downgrades
  - MBIA $2.6bn in new capital plus downgrades
- XL Re – June 30 2008 s/h capital $8.8b
  - Paid $1.775b to terminate $64.6b of limit with SCA
  - $2.875b in new capital (August 08)
- AIG
  - $423b US corporate bonds downgraded in 12m to 6/08
  - US bankruptcy filings for year to 30/6/08
    - Consumer filings up 28.4% to 934k
    - Business filings up 41.6% to 34k
Closer to home……

- Not just a financial / professional lines issue
  - 115% increase in home accidental damage claims year on year
  - >100% increase in fraudulent yacht claims year on year
  - 83% increase in fraudulent travel insurance claims
  - 13.3% increase in fraudulent motor claims in last qtr
  - Recession –
    - violent crime could grow by 19% in 2008
    - theft and burglaries could rise by 7% in 2008 / 2% in 2009

- UK personal debt £1,449b
  - c £900b 5 years ago
  - c £550b 10 years ago
Are there more problems to come?

Household debt as a % of disposable income

Source: Thomson Financial Datastream
Further credit losses?

- Alt-A mortgages
- Payment option mortgages
- Negative amortization mortgages
- Leveraged loans
- High yield bonds
- Credit card receivables
- Auto loan receivables
- Commercial real estate loans
- Construction loans
- Student loans
- Trade credit
Direct Exposures – E&O and D&O

- Mortgage Brokers / Regional Banks / Surveyors
  - Allegedly 90% of subprime mortgages may involve fraud
  - Mis-selling issues / fraudulent lending / poor underwriting
  - Inflated valuations

- Money Centre / Investment Banks / CDO Managers / Hedge Funds
  - Improper margin calls
  - Flawed valuation of underlying assets
  - Poor underwriting / structuring of Capital Markets position
  - Fraudulent conveyance / breach of contract on loan servicing
Direct Exposures – E&O and D&O

- Trustees/Pension Funds
  - Breach of fiduciary duty

- Rating Agencies
  - Failure to properly rate investment

- Financial Guarantors Insurers
  - Mortgage indemnity
  - Credit wrap asset backed securities

- Regulatory investigation of all aspects
Secondary Exposures

- Resulting financial distress puts pressure on...
  - Personal lines, SMEs etc
    - Fraudulent claim rates expected to increase
    - Increased propensity to make small claims
    - Arson rates expected to increase
  - Property insurance, FI crime etc
    - Theft & burglary rates expected to increase
  - Med Bens, EL, WCA, PHI, PPI etc
    - Sickness rates expected to increase
    - Unemployment rates also expected to rise
  - GL, PL, EL, etc
    - Expenditure on maintenance and safety upgrades slows down
    - More “Slip & Trip” claims expected
Assets – Invested

- Credit spreads increase
  - AAA Corporate spreads nearly trebled from 65bp to ~180bp
  - Impact generally greater for less strongly rated bonds
  - Portfolio value could easily fall by 10% or more

- Equity markets have also slumped
  - S&P 500 down >20% since July 2007
  - FTSE 250 down >25% since July 2007

- Possibility of direct losses from any CDO holdings

- Investments in other financial institutions?
Assets – Non-Invested

- Reinsurance complications might follow?
  - Coverage arguments / basis risk (esp. cas clash)
  - Credit risk / extreme cashflow risk
  - Downgrades impacting bad debt reserves
  - Potential need to replace RI markets mid-term or at renewal

- Insolvencies in debtors
  - E.g. MGA with premium retained to fund claims
Capital Markets

- Capital markets hurting even more…
  - What does this do to cost and availability of capital?

- Re/insurers with capital backing from Lehman?

- Ability of re/insurance industry to recapitalise after major event
  - FHCF has spent $224m for put option to issue $4b bond to Berkshire Hathaway at 5.6% of par following a major cat

- Impact on investors appetite for cat bonds?
Implications for Capital Modelling

- This is not a 1 in 200 insurance event

- Many different areas at the same time
  - Worst case on subprime losses for FI = worst case for PI, D&O, PPI, attritional motor / domestic property etc?
  - Both sides of the balance sheet

- Capture difference between mean- and tail-correlation?

- Model major events & overlay impact on “usual” loss distributions?
EXAMPLE scenario test

- Treat each component as fully additive, for example
  - Load +10 - 15% on all your personal lines loss ratios?
  - Assume 50% increase in insolvencies (D&O, trade credit)?
  - Assume 300 bank insolvencies & $1.6t total writedowns (FI, PI)?
  - Assume additional 30% drop in housing value (PI, credit)?
  - Assume additional 20% drop in equity values?
  - Assume additional 15% drop in corporate bond values?
  - Assume your largest single reinsurer defaults?
EXAMPLE scenario test

- Compare to 1 in 20 to 1 in 50 year results from your ICA model
  - Stress your assumptions – double your estimate?
  - What if it coincided with a major nat cat?

- Does this sit well?
  - If not, take a closer look at your ICA…
The next big thing……

- What next?

- ICA model should anticipate extreme event potential
  - Did your model anticipate anything with the widespread impact of sub-prime and the credit crunch?
  - Are you being ‘imaginative enough’ when scenario testing in the context of capital / balance sheet events?
  - How are you modelling tail correlations?
  - How are you correlating with assets / reinsurance?

- Correlation or Causation?
Conclusions

- The world is changing at an ever-increasing pace
- The past is not sufficient to predict the future
- We need to use our imagination
- We should have sold our houses in spring 2007
Questions

- terry.masters@aon.co.uk
- jim.riley@aon.co.uk
- mark.flower@aon.co.uk
- gillian.james@aon.co.uk

- 020 7623 5500
Useful Links

- List of losses plus writedowns, capital raised by bank:
  http://www.bloomberg.com/apps/news?pid=20601206&sid=aSA5c5wow9mc&refer=realestate

- Organised & factual web-site of useful links
  http://www.creditwritedowns.com/2008/05/credit-crisis-timeline.html#Escalating%20Losses

- Leaked government briefing memo on recession crime rate rises
  http://www.timesonline.co.uk/tol/news/politics/article4653093.ece

- UK personal debt statistics
  http://www.creditaction.org.uk/debt-statistics.html
# Appendix A – Bank losses 20/8/08

<table>
<thead>
<tr>
<th>Firm</th>
<th>Writedown &amp; Loss</th>
<th>Capital Raised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citigroup Inc.*</td>
<td>55.1</td>
<td>49.1</td>
</tr>
<tr>
<td>Merrill Lynch &amp; Co.</td>
<td>51.8</td>
<td>29.9</td>
</tr>
<tr>
<td>UBS AG</td>
<td>44.2</td>
<td>28.1</td>
</tr>
<tr>
<td>HSBC Holdings Plc</td>
<td>27.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Wachovia Corporation</td>
<td>22.7</td>
<td>11</td>
</tr>
<tr>
<td>Bank of America Corp.</td>
<td>21.2</td>
<td>20.7</td>
</tr>
<tr>
<td>IKB Deutsche Industriebank AG*</td>
<td>15.1</td>
<td>12.5</td>
</tr>
<tr>
<td>Washington Mutual Inc.</td>
<td>14.8</td>
<td>12.1</td>
</tr>
<tr>
<td>Royal Bank of Scotland Group Plc</td>
<td>14.6</td>
<td>23.8</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>14.4</td>
<td>5.6</td>
</tr>
<tr>
<td>JPMorgan Chase &amp; Co.*</td>
<td>14.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Deutsche Bank AG</td>
<td>10.6</td>
<td>3.2</td>
</tr>
<tr>
<td>Credit Suisse Group AG</td>
<td>10.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Barclays Plc*</td>
<td>10.1</td>
<td>18.3</td>
</tr>
<tr>
<td>Wells Fargo &amp; Company</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Lehman Brothers Holdings Inc.</td>
<td>8.2</td>
<td>13.9</td>
</tr>
<tr>
<td>Credit Agricole S.A.</td>
<td>7.9</td>
<td>8.7</td>
</tr>
<tr>
<td>Fortis</td>
<td>7.3</td>
<td>7.1</td>
</tr>
<tr>
<td>Bayerische Landesbank*</td>
<td>7.1</td>
<td>0</td>
</tr>
<tr>
<td>HBOS Plc</td>
<td>7</td>
<td>7.4</td>
</tr>
<tr>
<td>ING Groep N.V.*</td>
<td>6.8</td>
<td>4.7</td>
</tr>
<tr>
<td>Societe Generale</td>
<td>6.7</td>
<td>9.6</td>
</tr>
<tr>
<td>Canadian Imperial Bank of Commerce*</td>
<td>6.3</td>
<td>2.8</td>
</tr>
<tr>
<td>Mizuho Financial Group Inc.</td>
<td>5.9</td>
<td>0</td>
</tr>
<tr>
<td>National City Corp.</td>
<td>5.4</td>
<td>8.9</td>
</tr>
<tr>
<td>Other banks</td>
<td>98.5</td>
<td>55</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>503.8</strong></td>
<td><strong>352.5</strong></td>
</tr>
</tbody>
</table>

Appendix B – Bank job losses 27/05/08

<table>
<thead>
<tr>
<th>Firm</th>
<th>Positions Cut</th>
<th>% of Headcount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citigroup</td>
<td>15,900</td>
<td>4.30%</td>
</tr>
<tr>
<td>Bear Steams</td>
<td>9,159</td>
<td>66</td>
</tr>
<tr>
<td>Royal Bank of Scotland</td>
<td>7,200</td>
<td>3.2</td>
</tr>
<tr>
<td>UBS</td>
<td>7,000</td>
<td>8.8</td>
</tr>
<tr>
<td>Lehman Brothers</td>
<td>6,390</td>
<td>23</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>5,220</td>
<td>8.3</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>4,440</td>
<td>9.4</td>
</tr>
<tr>
<td>JPMorgan Chase</td>
<td>4,100</td>
<td>2.3</td>
</tr>
<tr>
<td>Bank of America</td>
<td>3,650</td>
<td>1.7</td>
</tr>
<tr>
<td>Washington Mutual</td>
<td>3,000</td>
<td>6.5</td>
</tr>
<tr>
<td>SunTrust</td>
<td>2,400</td>
<td>7.6</td>
</tr>
<tr>
<td>Northern Rock</td>
<td>2,000</td>
<td>40</td>
</tr>
<tr>
<td>HSBC</td>
<td>1,650</td>
<td>0.5</td>
</tr>
<tr>
<td>WestLB</td>
<td>1,530</td>
<td>25</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>1,500</td>
<td>4.7</td>
</tr>
<tr>
<td>Wachovia**</td>
<td>1,443</td>
<td>1.2</td>
</tr>
<tr>
<td>Credit Suisse</td>
<td>1,320</td>
<td>2.7</td>
</tr>
<tr>
<td>Other banks</td>
<td>5,354</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83,256</strong></td>
<td></td>
</tr>
</tbody>
</table>

# Appendix C – Bank Insolvencies

## FDIC Bank Insolvencies

<table>
<thead>
<tr>
<th>Bank Name</th>
<th>Closing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver State Bank, Henderson, NV</td>
<td>September 5, 2008</td>
</tr>
<tr>
<td>Integrity Bank, Alpharetta, GA</td>
<td>August 29, 2008</td>
</tr>
<tr>
<td>The Columbian Bank and Trust, Topeka, KS</td>
<td>August 22, 2008</td>
</tr>
<tr>
<td>First Priority Bank, Bradenton, FL</td>
<td>August 1, 2008</td>
</tr>
<tr>
<td>First Heritage Bank, NA, Newport Beach, CA</td>
<td>July 25, 2008</td>
</tr>
<tr>
<td>IndyMac Bank, Pasadena, CA</td>
<td>July 11, 2008</td>
</tr>
<tr>
<td>First Integrity Bank, NA, Staples, MN</td>
<td>May 30, 2008</td>
</tr>
<tr>
<td>ANB Financial, NA, Bentonville, AR</td>
<td>May 9, 2008</td>
</tr>
<tr>
<td>Hume Bank, Hume, MO</td>
<td>March 7, 2008</td>
</tr>
<tr>
<td>Douglass National Bank, Kansas City, MO</td>
<td>January 25, 2008</td>
</tr>
<tr>
<td>Miami Valley Bank, Lakeview, OH</td>
<td>October 4, 2007</td>
</tr>
<tr>
<td>NetBank, Alpharetta, GA</td>
<td>September 28, 2007</td>
</tr>
</tbody>
</table>

## Other Major Insolvencies

- Northern Rock: Nationalised by UK Government
- Bear Sterns: Purchased by JP Morgan/Chase
- Roskilde Bank: Bailed out by Danish Government
- IKB: Purchased by KfW
Appendix D – Ultimate credit loss

- International Monetary Fund $945 b

- John Paulson $1,300b

- Bridgewater Associates $1,600b

- Nouriel Roubini $1,000 – 2,000b
  “closer to $2tn”
  [http://online.barrons.com/article/SB121763156934206007.html?mod=9_0031_b_this_weeks_magazine_main](http://online.barrons.com/article/SB121763156934206007.html?mod=9_0031_b_this_weeks_magazine_main)