Introduction to the Structured Securities

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NAIC

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Learning Objectives

At the end of this presentation, you will be able to:

• Familiarize yourself with the Structured Securities Group
• Understand insurance company exposure to RMBS and CMBS.
• Acquaint yourself with the annual RMBS/CMBS valuation process.

Structured Securities Group
About Us

- Structured Securities Group (SSG) was formed in 2013 and is based in NAIC’s New York Office.
- SSG’s primary function is to oversee an annual valuation of insurance company held Residential Mortgage Backed Securities (RMBS) and Residential Mortgage Backed Securities (CMBS).
- In 2015, SSG analyzed approximately 27,716 CUSIPs consisting of 22,406 RMBS and 5,310 CMBS.

Our Origin

- Non-agency RMBS market suffers substantial losses and securities’ downgrades.
- AIG on the brink of bankruptcy due to non-insurance subsidiary’s investment in RMBS and RMBS related instruments.
- Fannie Mae and Freddie Mac taken into conservatorship by the FHFA in 2008.
- Mortgage originators sued over misrepresentations regarding the quality of the mortgages sold into RMBS transactions.
- Monoline insurers which wrote financial guarantees on RMBS and RMBS-related instruments suffer from higher than expected claims. Many are in rehabilitation.
Impact on Insurance Regulation

- Recognition of the data and methodological shortcomings of Credit Rating Providers (CRP)
- Broader concerns about the extent of regulatory reliance on credit ratings

Development of an alternative methodology for measuring the credit risk of RMBS and CMBS

NAIC’s Financial Modeling

In 2009, NAIC responded to the impact of rating downgrades by the Credit Rating Providers (CRPs) on insurers’ risk-based capital (RBC) charges amid the burst of the real estate bubble.

- In 2009: The change in risk measurement for RMBS in the regulatory framework first became effective for the statutory reporting in year-end 2009.
- In 2013: NAIC’s in-house Structured Securities Group (SSG) was formed to institutionalize the relevant regulatory functions.
- Subsequently, the scope of financial modeling was expanded to commercial mortgage-backed securities CMBS for year-end 2010.
Introduction to Structured Securities

Introduction

- Structured Securities are fixed income investments whose source of repayment is limited to a defined and legally segregated pool of assets.
- The most common underlying assets are mortgage related – residential and commercial.
- Statutory accounting for structured securities is defined by SSAP 43R, while analytical procedures are defined by Part Seven of the Policies and Procedures Manual of the NAIC Capital Markets and Investment Analysis Office.
RMBS

| Description | Securitizations of one to four family homes, separated by borrower and loan type (e.g. fixed/ARM). |
| Sub-types | 1) Jumbo Prime – loans to borrowers typically above GSE limit  
2) Subprime/Alt-A – loans to borrowers with poor credit or loans non-standard features.  
3) Resecuritization – repackaging of previously issued securities. |
| History | Widely blamed for the recent financial crisis. Issuance of non-agency (non Fannie/Freddie) RMBS has dwindled in the aftermath. |
| Credit Aspects | Due to the large number of loans and privacy limitations, the analysis is statistical in nature. Several consultancies provide macroeconomic projections by MSA and loan type. |

RMBS Cash Flows

[Diagram of RMBS cash flows showing the relationships between originators, underwriters, servicers/master servicer, trust (issuer), trustee/administrator, and investors.]
CMBS

| Description | Commercial Mortgage Backed Securities
| Sub-types | Securitizations of commercial property, primarily 1) office, 2) multifamily, 3) retail and 4) hotel.
| Sub-types | 1) Conduit deals include smaller a large amount of small loans
| Sub-types | 2) Fusion or Large Loan deal include a smaller number of large "trophy" properties
| Sub-types | 3) Single Asset – securitizations by a single very large property
| Sub-types | 4) Resecuritization – repackaging of previously issued securities.
| History | CMBS Market traces its origins to issuances by the Resolution Trust Corp. Like the underlying market – prone to boom and bust cycles.
| Credit Aspects | "Modeling plus": Smaller loans can be handled statistically, but large loans need to be analyzed with the aid of a CRE professional. Several sources for CRE relevant projections (e.g. cap rate and vacancy projections by MSA and type)
Insurance company exposure to Structured Securities

<table>
<thead>
<tr>
<th>Collateral Type</th>
<th>2015 YE BACV ($Bil)</th>
<th>2014 YE BACV ($Bil)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMBS</td>
<td>107.82</td>
<td>115.02</td>
<td>-6.3%</td>
</tr>
<tr>
<td>CMBS</td>
<td>167.12</td>
<td>173.93</td>
<td>-3.9%</td>
</tr>
<tr>
<td>Loan/CLO</td>
<td>52.36</td>
<td>51.79</td>
<td>1.1%</td>
</tr>
<tr>
<td>Auto</td>
<td>20.60</td>
<td>23.05</td>
<td>-10.6%</td>
</tr>
<tr>
<td>CTL</td>
<td>16.87</td>
<td>15.88</td>
<td>6.2%</td>
</tr>
<tr>
<td>Credit Card</td>
<td>13.79</td>
<td>15.82</td>
<td>-12.8%</td>
</tr>
<tr>
<td>Equipment Lease</td>
<td>13.44</td>
<td>13.63</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Student Loan</td>
<td>8.46</td>
<td>7.73</td>
<td>9.5%</td>
</tr>
<tr>
<td>Aircraft Lease</td>
<td>10.27</td>
<td>7.01</td>
<td>46.5%</td>
</tr>
<tr>
<td>Trade Rec</td>
<td>3.45</td>
<td>3.34</td>
<td>3.3%</td>
</tr>
<tr>
<td>Other</td>
<td>110.55</td>
<td>96.98</td>
<td>14.0%</td>
</tr>
<tr>
<td>Total</td>
<td>524.74</td>
<td>524.17</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Source: NAIC; Schedule D1s 2014 and 2015. RMBS and CMBS included non-modeled securities.
Exposure Trends

BACV and Par amounts of modeled CMBS and RMBS

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>CMBS Par</td>
<td>181.397</td>
<td>169.864</td>
<td>157.700</td>
<td>157.402</td>
<td>$160.997</td>
<td>$152.169</td>
</tr>
<tr>
<td>CMBS BACV</td>
<td>171.637</td>
<td>161.862</td>
<td>151.428</td>
<td>154.848</td>
<td>$159.979</td>
<td>$151.862</td>
</tr>
<tr>
<td>RMBS Par</td>
<td>151.224</td>
<td>151.516</td>
<td>138.988</td>
<td>132.674</td>
<td>$132.017</td>
<td>$124.613</td>
</tr>
<tr>
<td>RMBS BACV</td>
<td>127.724</td>
<td>123.170</td>
<td>110.476</td>
<td>107.050</td>
<td>$107.087</td>
<td>$100.879</td>
</tr>
</tbody>
</table>

$ Billions

Annual Valuation Process
Overview

• SSG's operates under an “outsource and oversight” model. A vendor, currently Blackrock Solutions, is contracted to provide analysis for RMBS and CMBS.

• NAIC staff oversee all aspects of the process, including:
  – Creating macroeconomic scenarios for approval by VOS (E) TF
  – Oversight of modeling Credit Modeling including an extensive Quality Assurance process at the loan and pool level, as necessary.
  – Delivery of results to Insurers through the AVS+ platform.

• The following slides detail NAIC modeling philosophy and process.

Building Blocks of Modeling

Valuation or analysis of structured securities typically take the form of four distinct steps.

- **Macroeconomic Model**: Projects macroeconomic variables which drive the Mortgage Loan Credit Model.
- **Credit Model**: Projects the performance of each loan based on macroeconomic scenario and loan characteristics.
- **Waterfall Model**: Uses the results of the Credit Model to allocate cashflows/losses to each tranche in the deal.
- **Valuation Model**: Uses tranche cashflows to calculate some aspect of risk (e.g. rating, price).
Macroeconomic Model

“What’s going to happen in the world?”

Four scenarios of the NAIC:
- Optimistic
- Baseline
- Conservative
- Most Conservative

Credit Model

“In a given macroeconomic environment, what’s going to happen to my loans?”

Projects the performance of each loan based on macroeconomic scenario and loan characteristics

Outputs of Credit Model:
A time series of aggregate performance statistics including Principal, Interest, and Loss projections that are required to determine Cashflow distribution and Loss allocation
Waterfall Model

“If the loans perform in a certain way, how does my investment (tranche) perform?”

Outputs of Waterfall Model:
A time-series of cashflows for the tranche including principal and interest paid and losses taken.

Valuation Model

“If the investment performs in a certain way, what does that mean?”

The valuation block takes the raw cashflows and transforms them into a form of risk/value measurement.

The NAIC currently uses Intrinsic Price defined as “Weighted Average of (1 – Discounted Principal Loss)”.

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Price Breakpoints

Intrinsic Price, output of financial modeling

Reflect relevant RBC charges

Zero Loss: No Loss across All Model Scenarios

Risk-Based Capital Factor Schedule B Long Term Bonds (Unaffiliated)

Final Designation

Conclusion

• SSG’s origins lie in the recent financial crisis and the failure of structured finance ratings.

• Today, NAIC analyzes approximately 28,000 CUSIPs annually.

• NAIC continues to monitor developments in structured finance and insurance companies’ exposure to these ever-changing securities.