

By Azar Abramov, CFA
Structured Securities Group - Analyst

Overview of U.S. Insurance Industry Holdings of Modeled Non-Agency Mortgage-Backed Securities

This report focuses on insurers' holdings of modeled non-agency commercial mortgage-backed securities (CMBS) and non-agency residential mortgage-backed securities (RMBS) over the past four years. Additionally, it discusses the impact on estimated risk-based capital (eRBC)¹ from deriving designations based on financially modeled intrinsic prices (IP)² instead of relying solely on the ratings published by credit rating providers³ (CRPs). This procedure follows the requirements set forth in the *Statement of Statutory Accounting Principles (SSAP) No. 43R—Loan-backed and Structured Securities – Revised*.

The NAIC has been modeling insurance industry's CMBS for the past four years and RMBS for the past five years. Each security was modeled to determine its intrinsic price, which drives the breakpoint carrying prices. Insurers' compare these prices to their book/adjusted carrying value (BACV) price⁴ in order to determine NAIC designations, which are, in turn, mapped to RBC. This SSAP No. 43R procedure has a significant impact on the amount of RBC that insurance companies must maintain, particularly for RMBS holdings.

For the most part, insurers' year-end (YE) 2013 modeled CMBS and RMBS holdings remain similar to previous years. The most noteworthy change was the decline in eRBC for RMBS holdings based on modeled designations. In addition, this was the first year that average BACV price and IP of insurers' RMBS holdings increased in value. On the CMBS side, almost all of the holdings remain as zero loss bonds.

¹ Financial model-based designations and RBC calculations are estimated based on insurers' reported BACV matched against the breakpoint carrying prices, which results in an NAIC designation and is matched to the RBC factor (C1) and multiplied by the reported BACV. There was no consideration for covariance. This is our estimate of the actual RBC and we qualify it with an (e)-estimate.
For further reference, see SSAP No. 43R.

² The modeled intrinsic price is defined as difference between remaining par value and expected principal losses, which are generally discounted at the coupon rate of the security.

³ Credit rating providers are nationally recognized statistical rating organizations that are approved by the NAIC.

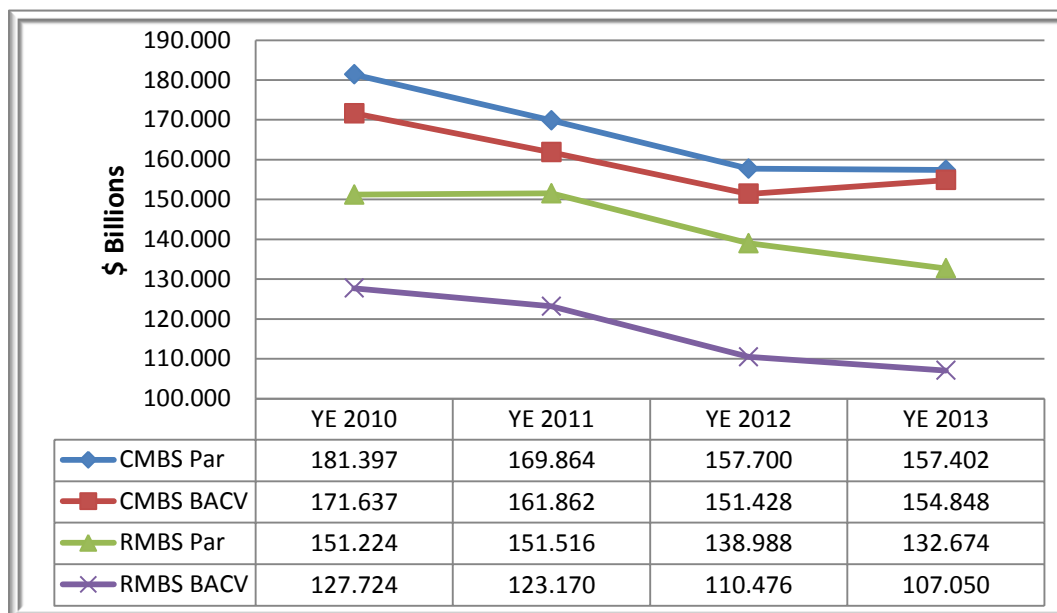
⁴ BACV price is calculated as the reported BACV divided by reported par value.

Insurers' holdings of CMBS and RMBS have gradually declined over the past four years, although this trend is slowing down. Repayments of existing loan balances, realized losses and low new issuance have led to substantial declines in the current outstanding balance of the U.S. non-agency MBS market. However, CMBS new issuance has been rebounding.

At YE 2013, according to the Securities Industry and Financial Markets Association (SIFMA), total outstanding⁵ CMBS decreased (6.2%) to \$604.9 billion and RMBS decreased (28.3%) to \$1,044.7 billion, compared to YE 2010 CMBS of \$644.8 billion and \$1,456.5 billion in RMBS. In contrast to the market decrease in outstanding mortgage securities, over the past four years, the insurance industry's CMBS holdings declined by a larger percentage (13.2%), while RMBS holdings declined less than the market (12.3%).

The insurance industry is a large participant in the mortgage-backed market. The modeled YE 2013 holdings of CMBS were \$157.402 billion par (or 25.6%) of total CMBS outstanding and RMBS at \$132.674 billion par (or 12.7%) of the total RMBS market. The non-agency MBS holdings discussed in this report pertains only to CMBS and RMBS that were financially modeled.

Graph 1: Par Value and BACV for CMBS and RMBS Holdings

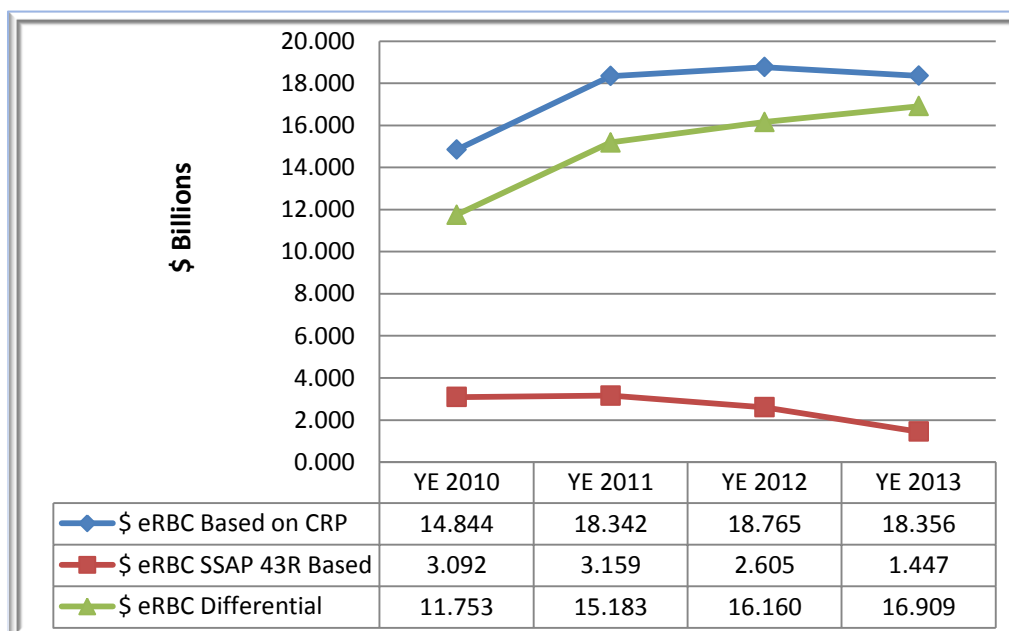


⁵ Excluding \$11.4 billion of manufactured housing for RMBS and \$20.9 billion of resecuritizations for CMBS.

Residential Mortgage-Backed Securities

The insurance industry continues to have significantly lower eRBC requirements for RMBS as a result of SSAP No. 43R-based designations, as noted from the positive differential between using CRP-based designations⁶ and SSAP No. 43R-based designations. YE 2013 eRBC differential rose to \$16.909 billion, which was mainly a result of a large decrease in SSAP No. 43R-based eRBC at YE 2013 to \$1.447 billion, from \$2.605 billion at YE 2012.

**Graph 2: Estimated eRBC for RMBS
Based on CRP-equivalent Designations and SSAP No. 43R-based Designations**



YE 2013 RMBS holdings consisted of 26.58% zero loss bonds, an improvement from the previous year's 21.30% zero loss portion. These bonds have no expected loss under any of the modeling scenarios and were, therefore, modeled at an IP of 100%, thus automatically equivalent to an NAIC 1 designation regardless of the insurer's carrying value. On the flip side, 73.42% of securities were non-zero loss with an average IP of 85.11%, which is also an improvement over YE 2012 non-zero loss portion, which had an average IP of 81.85%.

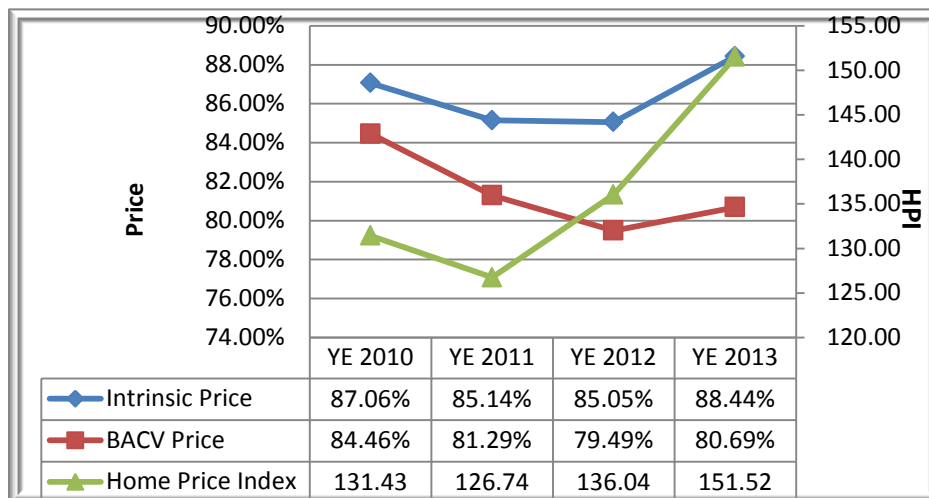
Table 1: RMBS Holdings with Modeled Loss and Zero Loss

Loss	IP	BACV Price	\$ BACV	% of BACV
Non-Zero Loss	85.11%	76.30%	78,599,190,874	73.42%
Zero Loss	100.00%	95.92%	28,451,065,067	26.58%
Grand Total	88.44%	80.69%	107,050,255,941	100.00%

⁶ CRP-based designations are as of April 2014.

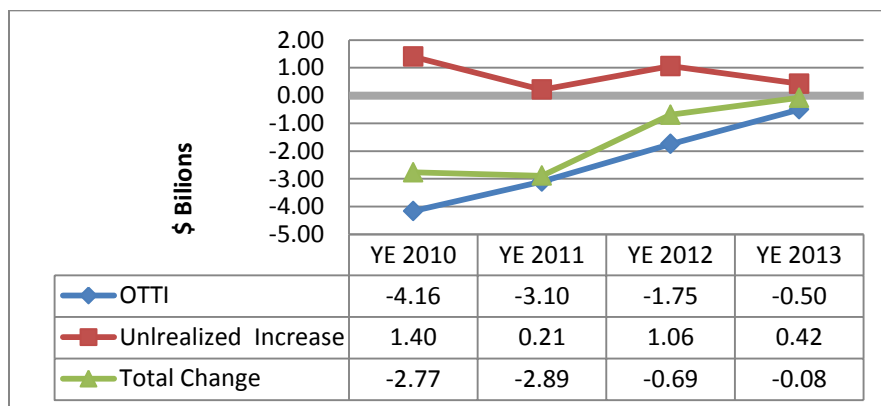
YE 2013 was the first period where both the average IP and BACV price⁷ increased year-over-year. The large decrease in eRBC based on SSAP No. 43R in 2013 is partially attributable to IP increasing at a faster pace than the BACV price, as depicted in Graph 3. IP increased to 88.44% at YE 2013 from 85.05% at YE 2012, while the BACV price did not increase as much; to 80.69% from 79.49% over the same time period. As the gap between IP and BACV price widened, the estimated SSAP No. 43R designations improved, and the eRBC requirement decreased to \$1.447 billion, which represented 1.4% of total RMBS (or \$107.050 billion BACV holdings). This trend is consistent with positive market dynamics and increases in the Home Price Index (HPI).

Graph 3: RMBS Intrinsic Price, BACV Price and Home Price Index⁸



Subsequent to the financial crisis, insurers recognized impairments and newly acquired securities were trading at discounted prices to par which led to lower BACV, particularly in the RMBS market. Other than temporary impairments (OTTI) have decreased over the past four years and unrealized gains (additions to BACV) have slightly offset the impairments.

Graph 4: RMBS Impairments and Unrealized Gains



⁷ IP and BACV price are dollar-weighted averages based on insurers' actual holdings.

⁸ Case-Shiller Home Price Index (HPI): Single-Family Aggregate Index (Index 2000Q1=100, SA) for United States
Source: Moody's Investors Service; CoreLogic, Inc. (right-hand side).

Table 2 illustrates that 84.7% of RMBS holdings experienced an upgrade based on SSAP No. 43R designations compared to CRP-equivalent designations. The upgraded portion has a favorably higher average IP of 87.69% vs. the average BACV price of 78.78%. Securities that had no change in designations represented 14.6%, where the IP and BACV price were about the same, and 0.7% were downgraded, where the IP was lower than the BACV price.

Table 2: RMBS SSAP No. 43R-based Designation Upgrades and Downgrades

Designation	IP	BACV	BACV	% of BACV
Upgrade	87.69%	78.78%	90,649,969,500	84.7%
No Change	93.90%	92.86%	15,599,642,931	14.6%
Downgrade	81.63%	98.88%	800,666,051	0.7%
Grand Total	88.44%	80.69%	107,050,278,482	100.0%

Table 3 depicts the RMBS breakdown by estimated designations (SSAP No. 43R-based in the left column running vertically) vs. designation based on CRP ratings in the top column running across. The SSAP No. 43R-based NAIC 1 category makes up most (84.93%) of the holdings of total BACV vs. CRP-equivalent 1 designations of (13.76%).

**Table 3: RMBS SSAP No. 43R Designation vs. CRP-equivalent Designation
% of \$107.050 Billion BACV, YE 2013**

	% of \$ BACV	CRP Equivalent Designation						Total %
		1	2	3	4	5	6	
S S A P 4 3 R	NAIC-1	13.38%	7.58%	7.53%	9.19%	20.08%	27.17%	84.93%
	NAIC-2	0.02%	0.14%	0.43%	1.10%	1.71%	2.22%	5.63%
	NAIC-3	0.03%	0.11%	0.11%	0.33%	1.37%	2.34%	4.28%
	NAIC-4	0.21%	0.05%	0.03%	0.27%	0.69%	2.13%	3.38%
	NAIC-5	0.06%	0.00%	0.01%	0.17%	0.13%	0.80%	1.16%
	NAIC-6	0.06%	0.00%	0.00%	0.00%	0.01%	0.55%	0.61%
	Total %	13.76%	7.87%	8.11%	11.06%	23.98%	35.21%	100.00%

Legend: Upgraded portion (from CRP-equivalent designation to SSAP No. 43R-based designation) is in **green**, no change in **light green** and downgraded in **orange**.

The bulk of the eRBC differential stems from the SSAP No. 43R-based upgrades to NAIC 1 designation, resulting in an eRBC difference of \$14.272 billion. This SSAP No. 43R-based NAIC 1 balance of \$90.919 billion (or 84.9%) of the RMBS portfolio has an average BACV price of 79.24%, which, in comparison, is favorably below the IP of 89.45% and leads to a significantly lower eRBC requirement.

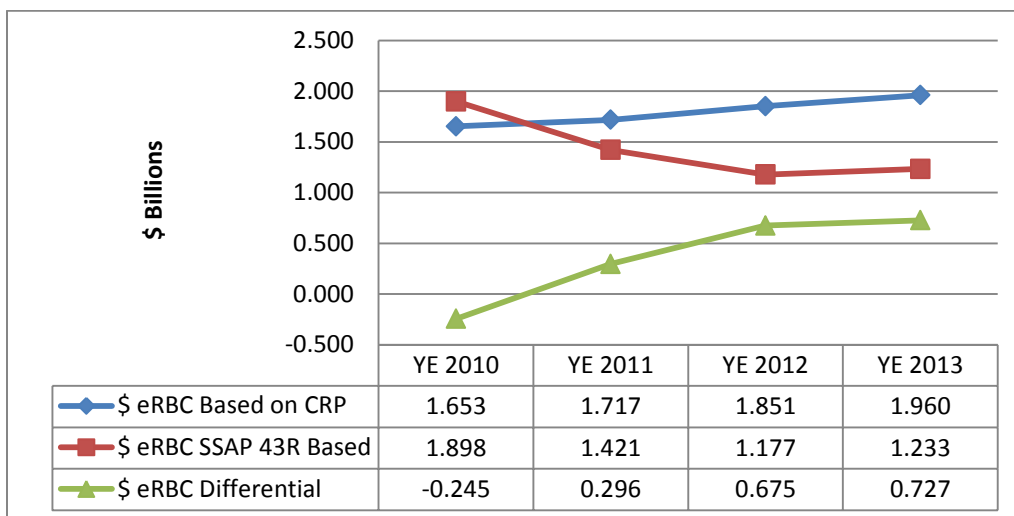
Table 4: RMBS SSAP No. 43R-based Designation and eRBC Compared to CRP-based eRBC

\$ in Billions	SSAP 43R Based				CRP Based	Difference
Designation	Intrinsic Price	BACV Price	Total \$ BACV	\$ eRBC	\$ eRBC	\$ eRBC
NAIC-1	89.45%	79.24%	90.919	0.348	14.620	14.272
NAIC-2	91.45%	93.10%	6.023	0.077	1.261	1.184
NAIC-3	87.48%	91.87%	4.584	0.204	1.116	0.913
NAIC-4	78.85%	88.21%	3.621	0.347	0.876	0.529
NAIC-5	67.31%	83.81%	1.245	0.275	0.305	0.030
NAIC-6	20.08%	73.86%	0.657	0.197	0.177	-0.020
Average/Total	88.44%	80.69%	107.050	1.447	18.356	16.909

Commercial Mortgage-Backed Securities

The insurance industry's CMBS holdings have a narrower eRBC differential between SSAP No. 43R-based designations and CRPs than RMBS. Nevertheless, the industry continued to experience a positive eRBC differential over the past three years.

**Graph 5: Estimated eRBC for CMBS
Based on CRP-Equivalent Designations and SSAP No. 43R Designations**



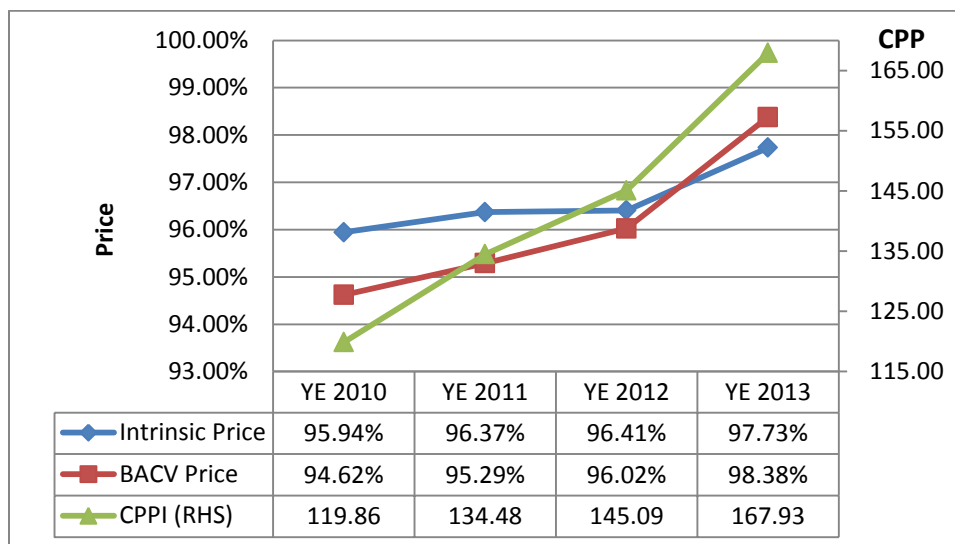
The greatest difference between CMBS and RMBS stems from the portion of securities with zero loss expectations. At YE 2013, 95.96% of insurers' CMBS holdings had no expected loss under any of the modeling scenarios and were, therefore, at an IP of 100%, thus automatically equivalent to an NAIC 1 designation regardless of the insurers' carrying value. This was an improvement from YE 2012, where zero loss portion was a smaller percentage (93.81%) of the CMBS portfolio.

Table 5: CMBS Holdings with Modeled Loss and Zero Loss

Loss	IP	BACV Price	\$ BACV	% of BACV
Non-Zero Loss	61.68%	67.03%	6,248,775,530	4.04%
Zero Loss	100.00%	100.35%	148,599,409,727	95.96%
Grand Total	97.73%	98.38%	154,848,185,257	100.00%

Both IP and BACV price have gradually increased over the past four years for CMBS along with the Commercial Property Price Index (CPPI). YE 2013 was the first time that insurers' average BACV price was higher than the IP. Nevertheless, the overall estimated eRBC requirement was lower than it would have been under the CRP-equivalent designations. This is mainly due to 10.2% of CMBS being upgraded based on SSAP No. 43R designations, which is driven by the high percentage of zero loss bonds.

Graph 6: CMBS Intrinsic Price, BACV Price and Commercial Property Price Index



Source: Moody's/RCA Commercial Property Price Index - All property (Index, 2000Q4=100, NSA) for United States (right side).

OTTI have decreased over the past four years and unrealized capital gains have slightly offset impairments.

Graph 7: CMBS Impairments and Unrealized Gains

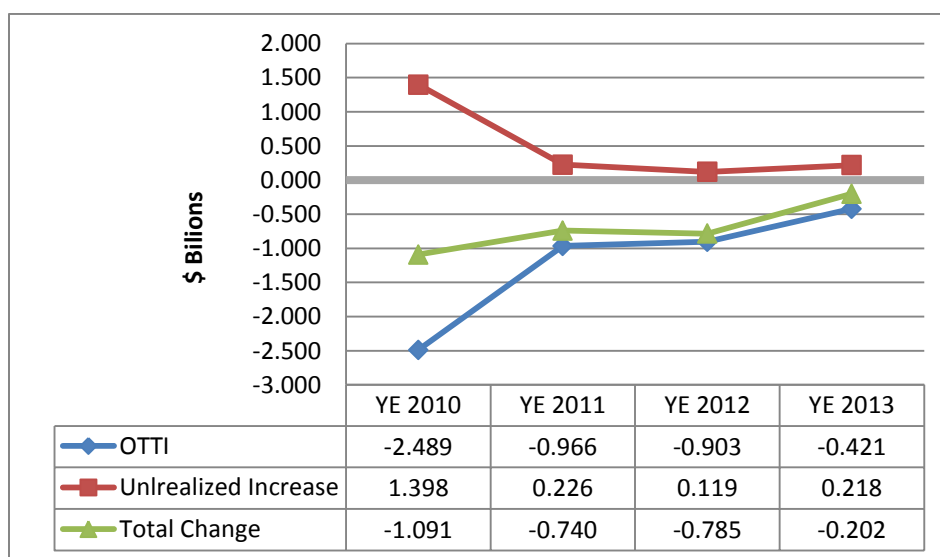


Table 6 illustrates that, even though the overall BACV price of 98.38% is higher than the average IP of 97.73%, there were still improvements in the SSAP No. 43R-based designations; 10.2% of holdings were upgraded in relation to CRP-equivalent designations. The average upgraded IP was favorably higher at 90.66% vs. the average BACV of 84.27%. Securities that had no change represented 89.1%, where the IP and BACV were about the same, and 0.7% were downgraded, as the IP was lower than the BACV. This led to a total estimated eRBC difference of \$0.727 billion.

Table 6: CMBS SSAP No. 43R-based Designation Upgrades and Downgrades

Designation	IP	BACV	BACV	% of BACV
Upgrade	90.66%	84.27%	15,812,262,069	10.2%
No Change	99.19%	100.52%	138,004,119,688	89.1%
Downgrade	46.98%	76.86%	1,031,803,500	0.7%
Grand Total	97.73%	98.38%	154,848,185,257	100.0%

Table 7 depicts the CMBS breakdown by estimated designations. The SSAP No. 43R-based NAIC 1 category makes up most of the holdings at 97.5% of total BACV vs. the CRP-equivalent 1 designation of 88.13%. The main driver for the difference was that zero loss bonds accounted for 95.96% of NAIC 1 designations.

**Table 7: CMBS SSAP No. 43R Designation vs. CRP-Equivalent Designation
% of \$154.848 Billion BACV, YE 2013**

	% of \$ BACV	CRP Equivalent Designation						Total %
		1	2	3	4	5	6	
S S A P 4 3 R	NAIC-1	88.11%	4.93%	2.29%	1.24%	0.75%	0.18%	97.50%
	NAIC-2	0.00%	0.01%	0.11%	0.20%	0.02%	0.01%	0.35%
	NAIC-3	0.00%	0.01%	0.09%	0.15%	0.09%	0.01%	0.36%
	NAIC-4	0.00%	0.00%	0.09%	0.20%	0.16%	0.02%	0.47%
	NAIC-5	0.00%	0.00%	0.04%	0.20%	0.26%	0.05%	0.54%
	NAIC-6	0.02%	0.00%	0.01%	0.09%	0.23%	0.44%	0.79%
	Total %	88.13%	4.95%	2.63%	2.08%	1.50%	0.71%	100.00%

Legend: Upgraded portion is in green, no change in light green and downgraded in orange.

Observing the SSAP No. 43R-based designations, the bulk of the lower eRBC stems from the NAIC 1 designation, where the IP of 99.12% is slightly higher than the BACV price of 99.02%. This NAIC 1 category, which accounts for \$150.974 billion (or 97.4%) of the CMBS portfolio, contributed to a difference of \$0.720 billion in eRBC out of the total difference of \$0.727 billion.

Table 8: SSAP No. 43R-based Designation and eRBC Compared to CRP-based eRBC

\$ in Billions	SSAP 43R Based				CRP Based	Difference
	Intrinsic Price	BACV Price	Total \$ BACV	\$ eRBC	\$ eRBC	\$ eRBC
NAIC-1	99.12%	99.02%	150.974	0.574	1.294	0.720
NAIC-2	92.67%	94.38%	0.539	0.007	0.047	0.040
NAIC-3	85.34%	89.93%	0.557	0.026	0.069	0.043
NAIC-4	72.70%	82.16%	0.726	0.070	0.104	0.034
NAIC-5	61.38%	78.55%	0.833	0.191	0.145	-0.046
NAIC-6	19.66%	67.96%	1.220	0.366	0.300	-0.065
Average/Total	97.73%	98.38%	154.848	1.233	1.960	0.727

Conclusion

The implementation of SSAP No. 43R with financial modeling for insurers' year-end reporting of non-agency MBS has had a large impact on eRBC requirements, particularly for RMBS. The overall profile of non-agency holdings continues to improve and is consistent with positive market dynamics. The insurance industry's average BACV price of RMBS holdings is conservative relative to the financially modeled intrinsic price. Additionally, the portion of zero loss bonds and prices increased at YE 2013 from YE 2012. CMBS holdings are comprised almost entirely of zero loss bonds. The SSAP No. 43R-based profile of insurers' non-agency MBS has resulted in lower eRBC requirements relative to CRPs' equivalent designations.

Structured Securities Group Contact Information

Name	Email	Title
Azar Abramov, CFA *	AAbramov@naic.org	Analyst
Robert Carcano	RCarcano@naic.org	Senior Counsel
Timothy Leaycraft	TLeaycraft@naic.org	Consultant
Han Lee, CFA, FRM	HLee@naic.org	Analyst
Eric Kolchinsky	EKolchinsky@naic.org	Director

* Lead