The Implications of CLO Intrinsic Price Designations for Investment Strategies & Capital Markets

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Synopsis:

This report explores the properties of CLO Intrinsic Price Designations, the ways they depart from the existing RBC framework, and the capital-favorable investment strategy incentives they generate. Critical to the discussion, we provide guidance on aligning Intrinsic Price Designations with the RBC framework. The hope is for the analysis to serve as a starting point in assessing the materiality of various modeling features that can possibly improve the RBC framework.

In spirit, the Intrinsic Price Designations are assigned to equate expected discounted lifetime loss with capital. While the final CLO model has not yet been released, our best estimates suggest the economic incentives it generates will depart significantly from the current framework:

- Shorter-dated, disproportionately low-credit quality tranches receive more favorable Intrinsic Price Designations. Discounting aside, if the Intrinsic Price method were based on Moody's structured finance methodologies, **an A2-Moody's rated 5-year bond would receive over 40 times the capital of a 1-year A2-rated bond**.
- The Intrinsic Price framework relies on rates at origination to discount future losses, and **investing in assets that originated when interest rates were elevated can allow for 10-20% capital relief**.
- A shift away from Aaa-rated tranches toward lower-rated, **higher-yielding Aa and A-rated tranches receiving a favorable Designated 1A, which can otherwise receive more than 500% higher capital.**
- Insurers will likely attempt to avoid a possible cliff for some tranches in the A to Baa rating range, **where Designations may swing with small changes to the economic scenario model**.

Historically, regulatory changes of this significance have resulted in noticeable shifts in insurers' investment strategies and capital markets. In addition, the regulatory guidelines can have downstream implications for policy affordability, with Intrinsic Price Designations disincentivizing longer-dated investments, resulting in longer-dated policies being otherwise more expensive.

We hope you find this resource helpful
It is consistent with our goal of bringing value to our community

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1 Executive Summary

The NAIC is making significant changes to the classification of debt, the use of agency ratings in Designations, and the capital treatment of asset-backed securities (ABS), which includes collateral loan obligations (CLOs). In 2023, the Valuation of Securities (E) Task Force (VOSTF) adopted the Intrinsic Price Designations with a year-end 2025 timeframe (originally 2024), at which point agency rating-based Designations will not be an option. Meanwhile, the Risk-Based Capital Investment Risk and Evaluations (E) Working Group (RBC-IRE-WG) is working with the American Academy of Actuaries to differentiate the capital treatment of ABS, with an initial focus on CLOs from the current framework, which by and large treats all debt uniformly.

This report explores the properties of CLO Intrinsic Price Designations, the ways they depart from the existing RBC framework, and the investment strategy incentives they generate. Critical to the discussion, we provide guidance on aligning Intrinsic Price Designations with the RBC framework. The hope is for the analysis to serve as a starting point in assessing the materiality of various modeling features that can possibly improve the RBC framework.

In spirit, the Intrinsic Price Designations are assigned to equate expected discounted lifetime loss with RCB C-1 (R-1) for life (property & casualty) companies. More precisely, Designations (like agency ratings) are discrete, and midpoints between adjoining RBC charges (pre-tax) are used as thresholds. Intrinsic Price Designations effectively bypass the role of Designations, which rank order risk, by directly assigning capital. The Intrinsic Price approach and underlying features of the CLO modeling introduce features that depart significantly from the C-1 (R-1) bond framework and incent capital-favorable investment strategies, which is the focus of this report and summarized in *Table 1*. While the final CLO model has not yet been released, our best estimates suggest the economic effects can be significant. Historically, regulatory changes of this significance have resulted in noticeable shifts to insurers' investment strategies and capital markets.

Table 1: Incentives Introduced through Intrinsic Price Designations: Capital-Favorable Investment Strategies.

Investment Strategy	Economic Significance	Aligning with the C-1 framework
A shift to shorter-dated, lower-quality tranches	Shorter-dated, disproportionately low-credit quality tranches receive more favorable Intrinsic Price Designations, departing from the maturity-agnostic C-1 bond framework and agency ratings. Discounting aside, if the Intrinsic Price method were based on Idealized Expected Loss Rates, an **A2-Moody's rated 5-year bond would receive over 40 times the capital of a 1-year A2-rated bond**.	A review of rating agency methodologies is worthwhile. Moody's Investor Service utilizes idealized default and expected loss rates, which represent aspirational default rate term structures that can be used when modeling the underlying collateral and in the process of a structured tranche rating assignment. In spirit, the rating of a CLO tranche would be set based on its maturity and the cumulative expected loss to maturity.
Preference for assets that originated when interest rates were elevated	The Intrinsic Price framework relies on rates at origination to discount future losses, departing from the C-1 bond framework. Investing in assets that originated when interest rates were elevated **can allow for 10-20% capital relief.**	The C-1 bond framework is agnostic to the interest rate environment, with losses discounted back to the analysis date using the average 10-year USD swap rate between 2000 and 2020. Meanwhile, the Intrinsic Price framework relies on rates at origination. The CLO Model can be aligned by discounting principal losses using the C-1 bond framework interest rate.
A shift to lower quality tranches receiving an NAIC Designated 1A	A shift away from AAA-rated tranches toward lower-rated, higher-yielding AA and A-rated tranches receiving a favorable Designated 1A. The significant portion of the AA and A-rated tranches that incur no losses across the economic scenarios will receive Designation 1A, which **can otherwise receive more than 500% higher capital.**	At least two modeling aspects should be reevaluated to allow for better differentiation of Designations. First, as described above, deterministic scenarios result in the CLO Model exhibiting fragility between A and BB ratings. Adding a distribution of collateral loan defaults can result in a likelihood of AA and A-rated tranches experiencing impairment along scenarios that would have their Designations differentiated from AAA-rated tranches. Second, it may be the case that the most severe scenario is not sufficiently severe.
Avoidance of possible cliff effects	Insurers will likely attempt to avoid a possible cliff for some tranches in the A to BBB rating range, where Designations may swing with small changes to the economic scenario model.	

In addition to a detailed analysis of the dynamics laid out in *Table 1*. This report also discusses other ways Intrinsic Price Designations depart from the C-1 bond framework. Notably, the Intrinsic Price framework departs from the C-1 bond framework, which separates the role of a credit risk measure, such as an agency rating that is agnostic to insurers' accounting considerations, and the role of capital, which is a portfolio concept that considers diversification and concentration effects, and intimately tied to statutory accounting. Important features within the C-1 framework that are abstracted from the Intrinsic Price framework include:

- The impact of reserving/the risk premium
- Tax offsets
- Concentration or diversification effects

While the report does not dive into the details and implications of these abstractions, we point out that aligning Intrinsic Price Designations with the C-1 bond framework on these fronts would remove C-1 bond factors or other capital or accounting features from the Designation process. Instead, it would allow Designations to be set based on something similar to idealized default and expected loss rates used by Moody's Investor Service, which we discuss further in the report.

Ultimately, the regulatory guidelines can have downstream implications for policy affordability. Intrinsic Price Designations disincentivize longer-dated investments, resulting in longer-dated policies being otherwise more expensive. We discuss this issue in greater detail in our report, *Benchmarking the Treatment of CLOs*.[1]

The rest of this report is organized as follows:

- An assessment of Intrinsic Price CLO Designations, contextual history, the modeling frameworks and implications for investment strategies, and guidance on how Intrinsic Price Designations can be improved
- A review of the Academy's efforts to differentiate capital for CLOs & ABS
- What's next?

We conclude by highlighting our optimism about the process and progress.

2 Intrinsic Price CLO Designations

In 2023, the Valuation of Securities (E) Task Force (VOSTF) adopted the Intrinsic Price Designations with a year-end 2025 timeframe (originally 2024), at which point agency rating-based Designations will not be an option. The approach is outlined in Instructions for the Financial Modeling of CLOs and will follow that of CMBS and RMBS. It had authorized the CLO Modelling Ad-hoc Group, which includes NAIC staff, interested regulators, and key stakeholders, to work through the various issues to achieve consensus over technical modeling details.

This section provides:

- Contextual history for Intrinsic Price Designations and motivation behind their use in CLOs
- An overview of the Intrinsic Price framework
- An assessment of the degree to which the Intrinsic Price framework departs from the C-1 (and R-1) bond framework and the resulting capital-favorable investment strategies it incents
- Guidance on how to align the Intrinsic Price framework more closely with the C-1 bond framework, with the hope of providing useful insights that can improve the RBC framework

2.1 Intrinsic Price Origins: 2009 MBS Reforms and CLO Arbitrage

The NAIC generally relies on agency ratings to assign Designations to rank credit risk of credit assets classified as *bonds*, which ultimately gets mapped to regulatory capital (RBC C-1 for life companies and R-1 for property & casualty). Assets

[1] See also *Response to EIOPA consultation paper on the advice on the review of the securitization prudential framework in Solvency II*.

classified as *bonds* include corporate, sovereign, and municipal credit, as well as debt of structured assets, such as CLOs and mortgage-backed securities (MBS); mortgage debt is not classified as a *bond* and is managed through a separate capital framework. While most *bonds* receive rating agency-based Designations, the NAIC Securities Valuation Office (SVO) assigns Designations to the debt of MBS, with agency rating-based Designations not permitted. As referenced above, the SVO will begin assigning Intrinsic Price Designations for CLOs.

This subsection provides contextual details for:

- The 2009 MBS reforms that had the NAIC shift from allowing for agency rating-based Designations to requiring their Intrinsic Price Designations
- Concerns over CLO regulatory capital arbitrage and the decision to require Intrinsic Price Designations

2.1.1 2009 MBS reforms

Discussed extensively on the NAIC's Structured Securities Project site, the great financial crisis (GFC) and the collapse of the housing market had significant downstream implications for the rapidly deteriorating MBS to a degree that far exceeded the level of default expectations of credit rating agencies. By the middle of 2009, MBS credit ratings had plummeted, and the issuance of new mortgage securitizations had stalled. Radical revisions of MBS loss expectations (often revised to 20 times as high as the original loss estimates) had agencies downgrade nearly 70% of all originally AAA-rated securities to sub-investment grade levels.

Rulemaking bodies, including the NAIC, raised concerns about the credibility of agency ratings and their use in regulations.[2] In addition, the NAIC 2009 Structured Securities Project introduced Intrinsic Price Designations to replace agency ratings, partly to provide capital relief. The NAIC's reliance on agency ratings for year-end 2009 Designations would have resulted in a nearly six-fold increase in life insurers' RBC for MBS. A CIPR study reported that RBC charges for life insurers would have jumped from about $2 billion to more than $14 billion. For context, in 2009, the life industry RBC C-1o, which covers RBC for the broader set of credit investments, was ~$38 billion, and the total capital across C-categories was ~$117 billion.[3] Had the NAIC not shifted to Intrinsic Price Designations, the impact on industry capital would have been significant.

2.1.2 CLO arbitrage and the move away from agency ratings

Over the last several years, NAIC staff have raised concerns over the potential for significant capital arbitrage, whereby insurers can reduce their regulator capital charge by holding the capital stack of a CLO instead of holding the underlying collateral loans directly. Several NAIC groups initiated efforts to understand the issues and their materiality better. This was complicated by the sequential nature of assigning capital, which is based on a debt investment's Designation and the different mandates across NAIC groups that oversee different parts of the process. If material arbitrage resulted in investment strategies that pose solvency concerns, the problem could be rating agencies assigning overly favorable ratings to CLOs relative to their collateral loans. Alternatively, the problem can be that the C-1 bond framework, which was estimated using only corporate bonds, is inappropriate for CLOs and other asset classes, as explained in the *2021 Revisions to the C-1 Bond Framework*.

To address concerns that CLO Designations may be overly favorable, the NAIC Valuation of Securities (E) Task Force (VOSTF) oversees the Designation process. In 2023, it adopted the Intrinsic Price Designations with a year-end 2025 timeframe (originally 2024), at which point agency rating-based Designations will not be an option. It had authorized the CLO Modelling Ad-hoc Group, which includes NAIC staff, interested regulators, and key stakeholders, to work through the various issues to achieve consensus over technical modeling details.

[2] In the United States, the Dodd-Frank Act of 2010, for example, required each federal agency to "review any regulation... that requires the use of... credit ratings... [and] to remove any reference to or requirement of reliance on credit ratings ...."

[3] See Aggregated Life RBC and Annual Statement Data, 2020 Data.

In parallel, the Risk-Based Capital Investment Risk and Evaluations (E) Working Group (RBC-IRE-WG) initiated efforts to differentiate capital for ABS, which includes CLOs, debt and residual interests. More on this later.

2.2 The Intrinsic Price Framework

This subsection provides details of the Intrinsic Price framework, breaking down the two distinct components:

- Intrinsic Price Designations, which will be applied to CLOs and currently used for CMB
- The CLO Model, economic scenarios, and their probabilities, which feed into the Intrinsic Price Designations

2.2.1 Intrinsic Price Designations

In spirit, the Intrinsic Price Designations are assigned to equate expected discounted lifetime loss with RCB C-1 (R-1) for life (property & casualty) companies. More precisely, Designations are discrete, and midpoints between adjoining RBC charges (pre-tax) are used as thresholds.[4]

Intrinsic Price Designations effectively bypass the role of Designations, which rank order risk, by directly assigning capital.

2.2.2 The CLO Model, economic scenarios, and their probabilities

The CLO Modeling Ad-hoc Group oversees the technical aspects of estimating lifetime loss, which will be used in assigning CLO Designations. It includes modeling a set of ten default rate and recovery scenarios (e.g., historical + 2 standard deviations) and modeling cash flows that determine CLO impairment, collectively the *CLO Model*. The cash flow modeling involved several rounds of discussions, with commenters having strong and varying views on modeling issues such as collateral loan prepayment rates and reinvestment. While those features can have significant implications for Designations, they are beyond the scope of this paper, which focuses entirely on Intrinsic Price and the scenarios.

The Ad-hoc CLO Group conducted a preliminary analysis of year-end 2023 CLO debt holdings across the scenarios posted on the webpage (CLO YE 2023 Industry Preliminary Results September 10, 2024). The scenario probabilities associated with each scenario are also needed to determine the total lifetime loss, which will be used in mapping to a Designation and capital.

2.3 Intrinsic Price Capital-Favorable Strategies: A Departure from the C-1 Framework

Discussed extensively in *Benchmarking the Treatment of CLOs*, Intrinsic Price Designations have features that depart from those of the C-1 bond framework in important dimensions that can impact incentives for investment strategies. Insurers, like other regulated financial institutions, have been shown to shift toward or away from assets due to changes to regulatory capital requirements. Notably, Intrinsic Price Designations introduce the following capital-favorable strategies:

- **A shift to shorter-dated, lower-quality tranches.** Shorter-dated, disproportionately low-credit quality tranches receive more favorable Intrinsic Price Designations, departing from the C-1 bond framework and agency ratings, which are maturity agnostic.
- **Preference for assets that originated when interest rates are elevated.** The Intrinsic Price framework relies on rates at origination to discount future losses, departing from the C-1 bond framework.

In addition, the economic scenarios and their probabilities and the CLO modeling framework (i.e., the CLO Model), in their current form, incent the following investment strategies:

- **A shift to lower quality tranches receiving an NAIC Designated 1A.** A shift away from AAA-rated tranches toward lower-rated AA and A-rated tranches receiving a favorable Designated 1A.

[4] The formal process is described in the NAIC Purposes and Procedures Manual.

- **Avoidance of possible cliff effects.** Insurers will likely attempt to avoid a possible cliff for some tranches in the A and BBB range, where Designations may swing with small changes to scenarios.

We now explore the economic significance of these strategies and the mechanisms by which they are generated. We then explore aligning the CLO Model more closely with the C-1 bond framework. The hope is for the analysis to serve as a starting point in assessing the materiality of various modeling features that can possibly improve the RBC framework.

2.3.1 Economic significance of incentives and the mechanisms by which they are generated

2.3.1.1 Shorter-dated, disproportionately low-credit quality tranches receive more favorable Designations

C-1 (and R-1) bond framework is maturity agnostic, with capital strictly a function of Designations. Agency ratings, such as those produced by Moody's, which feed into Designations, are also agnostic to maturity. Meanwhile, Intrinsic Price is measured as cumulative discounted lifetime loss, which decreases as maturity nears. As a result, Intrinsic Price Designations improve as maturity approaches and shorter-dated tranches receive more favorable. This property departs from agency rating-based Designations and the C-1 bond framework.

While we don't have access to the CLO Model to quantify Intrinsic Price maturity effects, we can benchmark the effect to Moody's Investors Service's *Idealized Default and Expected Loss Rates,* which it uses to rate structured assets as detailed in Rating Symbols and Definitions. In spirit, Moody's sets CLO tranche ratings to the cumulative expected loss to maturity as presented in *Figure 1*. Since Intrinsic Price Designations effectively assign capital to expected loss, the table provides a sense of the capital that would be assigned if the CLO Model were based on the methods used by Moody's Investors Services. The increase in expected loss with remaining time to maturity is significant, with an A2-Moody's rated 5-year bond receiving over 40 times the capital of a 1-year A2-rated bond if Moody's methods were used to produce Intrinsic Price Designations, as highlighted in red.

*Discounting aside, if the Intrinsic Price method were based on Idealized Expected Loss Rates, an **A2-Moody's rated 5-year bond** would receive **over 40 times the capital** of a **1-year A2-rated bond**; the ratio of their cumulate expected loss rates.*

Figure 1: Moody's Investors Service Idealized Expected Loss Rates Used for Rating Structured Assets

Moody's Idealized Cumulative Expected Loss Rates

	Year									
	1	2	3	4	5	6	7	8	9	10
Aaa	0.0000%	0.0001%	0.0004%	0.0010%	0.0016%	0.0022%	0.0029%	0.0036%	0.0045%	0.0055%
Aa1	0.0003%	0.0017%	0.0055%	0.0116%	0.0171%	0.0231%	0.0297%	0.0369%	0.0451%	0.0550%
Aa2	0.0007%	0.0044%	0.0143%	0.0259%	0.0374%	0.0490%	0.0611%	0.0743%	0.0902%	0.1100%
Aa3	0.0017%	0.0105%	0.0325%	0.0556%	0.0781%	0.1007%	0.1249%	0.1496%	0.1799%	0.2200%
A1	0.0032%	0.0204%	0.0644%	0.1040%	0.1436%	0.1815%	0.2233%	0.2640%	0.3152%	0.3850%
A2	0.0060%	0.0385%	0.1221%	0.1898%	0.2569%	0.3207%	0.3905%	0.4560%	0.5401%	0.6600%
A3	0.0214%	0.0825%	0.1980%	0.2970%	0.4015%	0.5005%	0.6105%	0.7150%	0.8360%	0.9900%
Baa1	0.0495%	0.1540%	0.3080%	0.4565%	0.6050%	0.7535%	0.9185%	1.0835%	1.2485%	1.4300%
Baa2	0.0935%	0.2585%	0.4565%	0.6600%	0.8690%	1.0835%	1.3255%	1.5675%	1.7820%	1.9800%
Baa3	0.2310%	0.5775%	0.9405%	1.3090%	1.6775%	2.0350%	2.3815%	2.7335%	3.0635%	3.3550%
Ba1	0.4785%	1.1110%	1.7215%	2.3100%	2.9040%	3.4375%	3.8830%	4.3395%	4.7795%	5.1700%
Ba2	0.8580%	1.9085%	2.8490%	3.7400%	4.6255%	5.3735%	5.8850%	6.4130%	6.9575%	7.4250%
Ba3	1.5455%	3.0305%	4.3285%	5.3845%	6.5230%	7.4195%	8.0410%	8.6405%	9.1905%	9.7130%
B1	2.5740%	4.6090%	6.3690%	7.6175%	8.8660%	9.8395%	10.5215%	11.1265%	11.6820%	12.2100%
B2	3.9380%	6.4185%	8.5525%	9.9715%	11.3905%	12.4575%	13.2055%	13.8325%	14.4210%	14.9600%
B3	6.3910%	9.1355%	11.5665%	13.2220%	14.8775%	16.0600%	17.0500%	17.9190%	18.5790%	19.1950%
Caa1	9.5599%	12.7788%	15.7512%	17.8634%	19.9726%	21.4317%	22.7620%	24.0113%	25.1195%	26.2350%
Caa2	14.3000%	17.8750%	21.4500%	24.1340%	26.8125%	28.6000%	30.3875%	32.1750%	33.9625%	35.7500%
Caa3	28.0446%	31.3548%	34.3475%	36.4331%	38.4017%	39.6611%	40.8817%	42.0669%	43.2196%	44.3850%
Ca	55.0000%	55.0000%	55.0000%	55.0000%	55.0000%	55.0000%	55.0000%	55.0000%	55.0000%	55.0000%
C	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%

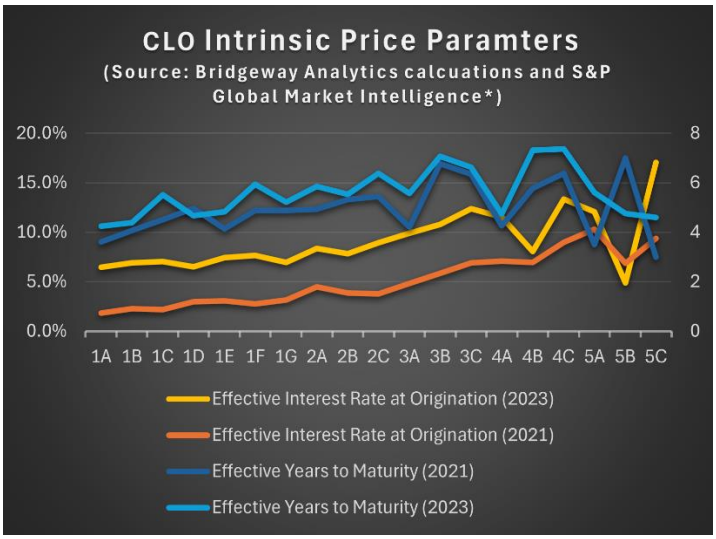
The maturity effect has a disproportionate impact on low-credit quality tranches as a result of the Designation 1A capital floor (e.g., C-1 for Designation 1A is 15.8 bps). Using *Idealized Expected Loss Rates* from *Figure 1* as a point of reference, we can see that at one year of remaining maturity, credit rated Baa3 (~Designation 2C) or worse can benefit from the maturity effect, as highlighted in blue; the expected loss for higher-quality credit is below the 15.8 bps floor.

2.3.1.2 More favorable Designations for assets originated when interest rates are elevated

The C-1 bond framework is agnostic to the interest rate environment. C-1 factors represent the initial funds needed to cover the 96th percentile greatest default loss on a portfolio of ten-year bonds. Losses in each period are discounted back to the analysis date using the average 10-year USD swap rate between 2000 and 2020. Meanwhile, the Intrinsic Price framework relies on rates at origination. As a result, expected losses on the principal are discounted more heavily for investments originated during elevated interest rate environments, resulting in more favorable Designations.

The significance of the discounting effect depends on several factors, including expected maturity and coupon. In addition, tranches that experience no losses across any economic scenarios are not impacted by discounting and will receive 1A Designations regardless. To get a sense of materiality, *Figure 2* presents the average effective interest rate and effective maturity for CLO tranches as reported by life companies in 2021 and 2023. The average effective interest rate is significantly higher in 2023 than in 2021, with values often over twice as high, and the average maturity is mildly higher across the Designation spectrum.

Figure 2: Average CLO Effective Yield and Average Maturity (2023 vs 2021)



To quantify the difference in treatment of a typical deal that originated in 2023 from those in 2021, we use back-of-the-envelope calculations since the CLO Modeling Ad-hoc Group, understandably, did not conduct 2021 CLO lifetime loss assessments across the economic scenarios. We estimate the capital relief by comparing the ratio of lifetime losses discounted by the respective average effective interest rates in each year. As above, we use Moody's *Idealized Expect Losses rates*, with the analysis presented in *Figure 3*. Capital relief can be significant, reaching 10-20% as the maturity reaches 5+ years, with the effect stronger for Designations of medium and lower quality.

Investing in assets originated during elevated interest rate environments can allow for 10-20% capital relief.

Figure 3: Investing in assets originated when interest rates are elevated provides capital relief

	Capital Reliefe from Strategy Focusing on Debt Originated in 2023 Rather than 2021									
	Years to Maturity									
NAIC Designation	1	2	3	4	5	6	7	8	9	10
1A	1.9%	3.4%	5.1%	6.6%	8.0%	9.2%	10.4%	11.6%	12.8%	13.9%
1B	1.9%	3.5%	5.1%	6.5%	7.8%	9.0%	10.2%	11.4%	12.6%	13.8%
1C	1.9%	3.5%	5.1%	6.4%	7.7%	8.9%	10.1%	11.2%	12.4%	13.6%
1D	2.8%	5.2%	7.4%	9.3%	11.0%	12.7%	14.3%	15.9%	17.5%	19.1%
1E	2.8%	5.2%	7.4%	9.2%	11.0%	12.6%	14.2%	15.8%	17.3%	18.9%
1F	2.8%	5.2%	7.4%	9.2%	10.9%	12.5%	14.1%	15.7%	17.2%	18.8%
1G	3.3%	5.8%	8.2%	10.2%	12.2%	14.1%	15.9%	17.7%	19.4%	21.1%
2A	3.3%	5.6%	7.9%	10.0%	12.0%	13.9%	15.7%	17.5%	19.2%	20.9%
2B	3.3%	5.6%	7.7%	9.8%	11.8%	13.7%	15.5%	17.3%	19.1%	20.7%
2C	4.5%	7.6%	10.4%	13.1%	15.7%	18.1%	20.4%	22.6%	24.7%	26.6%
3A	6.1%	10.1%	13.7%	17.0%	20.2%	23.1%	25.8%	28.4%	30.7%	33.0%
3B	5.4%	8.8%	11.9%	14.9%	17.7%	20.3%	22.7%	25.0%	27.1%	29.1%
3C	5.4%	8.6%	11.7%	14.6%	17.3%	19.9%	22.2%	24.4%	26.5%	28.5%
4A	5.4%	8.5%	11.6%	14.3%	17.0%	19.4%	21.7%	23.8%	25.9%	27.8%
4B	8.3%	12.9%	17.1%	20.9%	24.4%	27.5%	30.4%	33.0%	35.3%	37.5%
4C	8.3%	12.7%	16.7%	20.4%	23.8%	26.9%	29.7%	32.3%	34.6%	36.7%
5A	14.3%	20.7%	26.5%	31.3%	35.6%	39.1%	42.2%	44.8%	47.0%	48.9%
5B	14.3%	20.5%	26.1%	30.9%	35.1%	38.6%	41.6%	44.2%	46.4%	48.3%
5C	14.3%	20.2%	25.3%	29.7%	33.5%	36.7%	39.4%	41.8%	43.7%	45.4%

2.3.1.3 A shift to lower quality NAIC 1A Designated tranches and avoidance of possible cliff effect

Bank of America Global Research analyzed the CLO Model scenarios in their study, *Analyzing NAIC Scenario Results for CLOs: AAA-A: Good, BBB: Mixed, BB: Unfair*. The study applies its own probability distribution estimate to losses since the Ad-hoc Group has yet to report scenario probabilities; Bank of America provides access to the Excel file with probability weights for those who are interested.[5] The study finds that over 95% (75%) of AA (A) rated tranches will receive more favorable Designations than had they been agency ratings-based (*Figure 4* reproduces Exhibit 7 from the study). While the results should be taken as indicative given that the probability weights are those of Bank of America, a significant portion of the AA and A-rated tranches incur no losses across the economic scenarios, which will have them mapped to Designation 1A regardless of probability weights. The effect on capital is significant - an A2 Moody's rated tranche that would have received a 1F Designation would experience a reduction in capital of over 80% when assigned a 1A Designation (i.e., the C-1 factor for 1A Designated credit is over 500% that of 1F). This creates incentives to shift investments toward AA and A-rated tranches that receive a favorable 1A Designation and thus favorable capital.

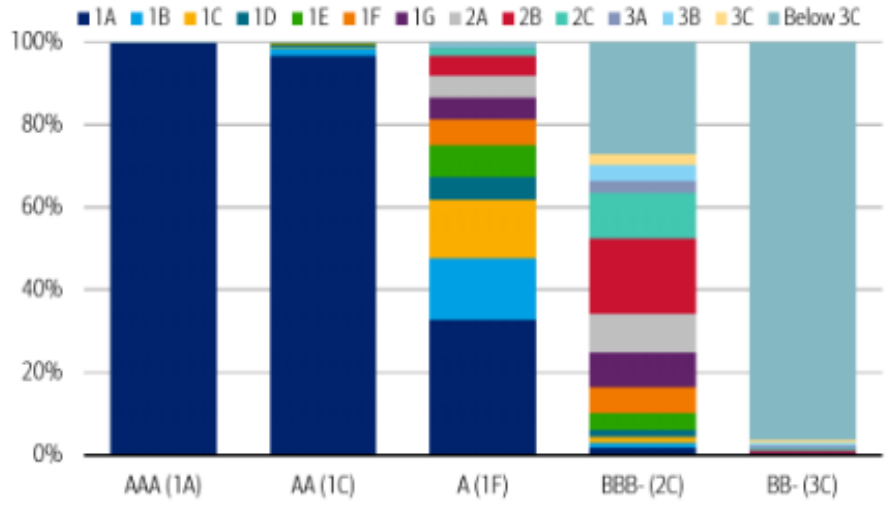
[5] The study does not discount losses, which means the estimated loss, and thus, NAIC Designations are more punitive/conservative than would be implied under the NAIC's methodology.

The significant portion of the AA and A-rated tranches that incur no losses across the economic scenarios will receive Designation 1A and can receive capital relief in excess of 80%.

Figure 4: Exhibit 7 Reproduced from the Bank of America Study

Exhibit 7: Distribution of Current Agency Ratings vs Modeled NAIC Ratings

Almost all AAA and AA are rated as NAIC 1A, Most A bonds receive favorable designations, mixed picture in BBB, worse in BBs



Source: BofA Global Research, NAIC, Bloomberg

BofA GLOBAL RESEARCH

A related property of the CLO Model is the possible manifestation of cliff effects. The ten economic scenarios are defined by deterministic default rates and recovery rates across the rating spectrum projected over ten years. Those deterministic rates are applied to all CLO collateral loans with no additional uncertainty. In reality, when an economic scenario plays out, each CLO deal will experience default and recovery rates above or below those rates (i.e., across the rating spectrum), depending on the composition of the collateral. In the hypothetical case where all CLOs have identical characteristics (e.g., same capital structure/subordination or the composition of collateral ratings), the CLO Model would result in either all tranches experiencing impairment along a scenario or no tranche impaired. This hypothetical example demonstrates how small changes to deterministic scenarios can result in potentially significant swings in Designations. The Bank of America study highlights the significant portion of BBB-rated CLOs being reclassified. While part of the reclassification results from other modeling features, such as the treatment of maturity in Intrinsic Price, the fragility introduced by deterministic scenarios can be significant. Thus, insurers will likely attempt to avoid a possible cliff for some tranches in the A and BB range, where Designations may swing with small changes to scenarios.

2.3.2 Lessons from history: Implications for investment strategy and capital markets

Figure 5 reproduces the Bank of America study Exhibit 1, which points to insurers owning over 50% of AA, A, and BBB-rated CLO tranches and 18% of AAA-rated CLO tranches based on 2022 year-end filings. Bank of America expects insurance demand for AA and A-rated tranches to increase, with most seeing more favorable NAIC Designations.

Figure 5: Exhibit 1 Reproduced from the Bank of America Study

Exhibit 1: Estimated holdings across CLO deals by institution type based on public filings / reports
BSL CLO, MM/PC CLO, Hybrid CLOs included

Rating	Total notional ($B)	US Banks	Japanese Institutions	Insurance	Money Managers	BDCs	SMAs / Hedge funds / CLO managers
AAA	583	33%	17%	18%	16%	0%	15%
AA	119			50%	19%	0%	31%
A	63			71%	22%	0%	7%
BBB	60			58%	23%	0%	19%
BB	42			23%	68%	1%	8%
B	3			23%	70%	2%	5%
Equity	117			9%	6%	6%	79%
Overall	**986**	**20%**	**10%**	**27%**	**19%**	**1%**	**24%**

Source: BofA Global Research, SNL, Bloomberg, Company filings, S&P LCD

BofA GLOBAL RESEARCH

Bank of America's projected changes in demand align with our own study, Efforts to Reform NAIC Investment Guidelines: Lessons Learned from History, which explores the lessons learned from two case studies of past guideline revisions and their downstream implications for insurers' investment strategies:

- The 2009 MBS reform, discussed above, introduced model-based Designations to replace agency ratings. The change was partly to provide capital relief for insurers holding MBS tranches that were downgraded due to deteriorated real estate values that came with the Great Financial Crisis (GFC). However, the change also incentivized insurers to hold on to and invest in new sub-investment grade MBS. By 2015, insurers' holdings of MBS below investment grade comprised over one-third of their overall MBS holdings, dwarfing the 5% observed for other asset classes.[6]
- The so-called *C-1 bond factor cliff* associates the punitive pre-2021 capital treatment of debt downgraded to an NAIC 3 Designation (~BB-rating). The cliff resulted in insurers selling bonds when downgraded below investment grade. With insurers being the most significant single bond market participant, often holding one-third of all outstanding investment-grade corporate bonds, the collective divesting of downgraded issues resulted in 'fire sale' transactions. Unfortunately, insurance companies that faced capital structure constraints were more likely to sell downgraded bonds, putting further strain on their solvency.[7]

These observations provide an important point of reference to the degree to which changes to capital guidelines can have significant implications for investment strategies, which in turn impact capital markets.

2.4 Aligning the CLO Model more closely with the C-1 bond framework

We now explore ways the Intrinsic Price Designations and the CLO Model can be refined to more closely align with the C-1 bond framework. We build on our earlier study, *Benchmarking the Treatment of CLOs*, which includes an assessment of Intrinsic Price Designations for MBS. That study identifies MBS characteristics whose Designations benchmark poorly. The hope is for the analysis to serve as a starting point in assessing the materiality of various modeling features that can possibly

[6] Becker, B., M. M. Opp, and F. Saidi, Regulatory Forbearance in the U.S. Insurance Industry: The Effects of Removing Capital Requirements for an Asset Class, The Review of Financial Studies (2021).

[7] Ellul, A., C. Jotikasthira, and C. T. Lundblad, Regulatory pressure and fire sales in the corporate bond market, Journal of Financial Economics (2011).

improve the RBC framework. In that same spirit, we now break down the features of Intrinsic Price and the CLO Model that would avoid the downstream incentives we outlined above.

2.4.1 Avoid shifting investment incentives to shorter-dated tranches

Similar to annualized yields and spreads, agency ratings, such as those produced by Moody's, are agnostic to maturity, as is the C-1 bond framework—meanwhile, Intrinsic Price measures cumulative lifetime loss. Several methods can align Intrinsic Price with the C-1 bond framework, and a review of how rating agencies approach this issue is worthwhile. Moody's Investor Service utilizes *idealized default and expected loss rates*, detailed in Rating Symbols and Definitions, which represent aspirational default rate term structures that can be used when modeling the underlying collateral and in the process of a structured tranche rating assignment. In spirit, the rating of a CLO tranche would be set based on its maturity and the cumulative expected loss to maturity. In a sense, one can think of the Moody's rating as an annualized measure, similar to annualized yields or spreads.

2.4.2 Avoid shifting investment incentives to those originated when interest rates are elevated

The C-1 bond framework is agnostic to the interest rate environment. C-1 factors represent the initial funds needed to cover the 96th percentile greatest default loss on a portfolio of ten-year bonds. Losses in each period are discounted back to the analysis date using the average 10-year USD swap rate between 2000 and 2020. Meanwhile, the Intrinsic Price framework relies on rates at origination. As a result, expected losses on the principal are discounted more heavily for investments that originated during elevated interest rate environments and which, in turn, receive more favorable Designations. The CLO Model can be aligned by discounting principal losses using the C-1 bond framework interest rate.

2.4.3 Avoid cliff effects and shifting investment incentives to lower quality NAIC Designated 1A tranches

Figure 4 reproduces Exhibit 7 from the Bank of America study, which demonstrates the CLO Model cannot differentiate between a significant portion of A and AA-rated tranches from AAA-rated tranches. While A-rated tranches exhibit low risk, with only a handful of transactions having experienced any impairment over the last 25+ years of CLO history, AAA-rated tranches generally have significantly more subordination and thus exhibit significantly less risk. For context, structural protection for an A-rated tranche is generally in the order of 18%, compared to 36% for AAA tranches. The CLO Model should differentiate those risks.

At least two modeling aspects should be reevaluated to allow for better differentiation. First, as described above, deterministic scenarios result in the CLO Model exhibiting fragility between A and BB ratings. Adding a distribution of collateral loan defaults can result in a likelihood of AA and A-rated tranches experiencing impairment along scenarios that would have their Designations differentiated from AAA-rated tranches. Second, it may be the case that the most severe scenario is not sufficiently severe.

2.4.4 Other departures from the C-1 framework

Revisions to the RBC C-1 Bond Factors describe the C-1 bond factors as follows:

> "The C-1 base factor for each... rating category... represents the amount of initial funds needed to cover the 96th percentile greatest default loss over ten years, offset by the portion of default loss already anticipated in statutory reserves... [It represents] the maximum 10-year cumulative portfolio loss, which considers recoverable tax on default loss and accumulated... offsets."

The CLO Model does not consider the impact of reserving/the risk premium, tax offsets, or the concentration or diversification effects. Instead, it sets Designations by equating expected discounted lifetime loss to capital, which means it sets both capital and Designations. The approach is a departure from the C-1 bond framework, which separates the role of a credit risk measure, such as an agency rating that is agnostic to insurers' accounting considerations, and the role of capital, which is a portfolio concept that considers diversification and concentration effects, and intimately tied to

statutory accounting. To get a sense of the materiality of this effect, the Baa3 pre-tax C-1 bond factor is 2.17% and is net of its Risk Premium of roughly 0.36% (~15% of the capital charge).[8]

Aligning Intrinsic Price Designations with the C-1 bond framework on these fronts would remove C-1 bond factors or other capital or accounting features from the Designation process. Instead, it would allow Designations to be set based on something similar to *idealized default and expected loss rates* used by Moody's Investor Service (see Rating Symbols and Definitions).

3 The Academy's Efforts to Differentiate Capital for CLOs & ABS

The Risk-Based Capital Investment Risk and Evaluations (E) Working Group (RBC-IRE-WG) is working with the American Academy of Actuaries to differentiate the capital treatment of ABS, with an initial focus on CLOs, from the current framework, which generally treats all debt uniformly. Regulators have endorsed the Academy's Principles for Structured Securities RBC (see RBC-IRE-WG 2023 Fall National Meeting Agenda & Materials). These include ensuring RBC aligns with statutory accounting treatment and principles when addressing arbitrage.

While the Ad-hoc Group and the Academy are coordinating on modeling approaches, the Intrinsic Price framework effectively assigns capital, which raises the question of what role the Academy's model will play.

If the Academy's capital framework for CLOs is ultimately adopted by regulators, Intrinsic Price Designations will change (abstracting from the discrete nature of Designations) to maintain the alignment of the capital charge with the expected discounted lifetime loss on the tranche. In other words, a new CLO capital framework will change CLO Designations but not capital, which is determined by the CLO's Intrinsic Price.

4 What's next?

The Academy is onboarding CLO data and vendor tools and is expected to provide an update in the coming months.

Meanwhile, CLO Technical Ad-hoc CLO Group met on September 30, 2024, with deliberations that covered:

- Methods being considered for assigning scenario probabilities.
- Refinements to reinvestment assumptions.
- An update on the timelines.

Which we now provide details on.

4.1 Methods Being Considered for Assigning Scenario Probabilities

Several technical considerations for designing scenarios were explored. The ten scenario probabilities will be assigned to minimize the mean square difference between the RBC of the underlying collateral and the CLO capital stack. The approach would use conditional tail expectation (CTE) as the choice of risk measures, with modeling being coordinated with the Academy, which is leading efforts to design the capital framework for CLOs. The approach departs from agency rating-based Designations in that RBC is integrated into the Intrinsic Price Designations. This results in properties, such as CLOs held by life holdings, which receive an RBC C-1 charge, and those held by property & casualty companies, which receive an R-1 charge, being assigned different Designations.

[8] See *Revisions to the RBC C-1 Bond Factors*.

4.2 Refinements to Reinvestment Assumptions

The Ad-hoc Group is exploring refinements to the reinvestment assumptions. It has posted a comparison of results under the new and current approaches for the six CLO transactions used to showcase model dynamics: Summary-additional loss projection modeling for 6 deals 09302024.

- Under the current framework (CLO-Exposure-Methodology-Draft-Updated-7.19.23), which was used to analyze the 2023 year-end holdings referenced above, cash flows from maturing collateral loans and recoveries from defaults are reinvested in credit with a weighted average rating factor (WARF) of the transaction. If the WARF is not reported, it is assumed to be Designation 4C (~Moody's rating of B3). Reinvested collateral is tracked separately from collateral reinvested in another period.
- Under the new approach, reinvestment is tracked separately for three credit quality segments, with cash flows now reinvested in credit aligning with the rating of the maturing collateral loans and default (i.e., Moody's rated B1 or better, B2, and B3 or worse). Since lower quality (e.g., those rated B3) loans default at higher rates, and since recovery is less than 100% of the principal, the relative composition of lower quality loans in the collateral will decrease over time, and the quality of the collateral will improve.

The new approach generally results in lower or equal losses across the ten scenarios, leading to more favorable Designations for the six transactions analyzed.

4.3 Timelines

- The Ad-hoc Group will publish an updated methodology document and post an analysis of CLO holdings under the new reinvestment assumptions.
- Probabilities will be produced before the November 2024 NAIC Fall National Meeting.
- Beginning in January, the Group hopes to post monthly CLO tranche analyses, including rating-based Designations and Intrinsic Price Designations.
- The posted CLO analysis does not currently include identifiers, such as CUSIPs, which the NAIC is not permitted to redistribute. The Ad-hoc Group is exploring ways of addressing this shortcoming.

5 What are we optimistic about?

We remain encouraged by the NAIC and regulators' ongoing commitment to ensuring that the decision-making process is transparent, inclusive, and open to feedback from the wider community. The recent postings and discussions demonstrate a clear dedication to creating ample opportunities for commentary and input, ensuring that various stakeholders can meaningfully contribute to the evolving framework.

One positive sign is the NAIC staff's ongoing active request for comments on current model proposals. This openness to external suggestions will allow for more informed and well-rounded solutions. As engagement continues to increase, we believe the depth of input from various industry participants will create a more effective and robust regulatory framework. Ultimately, this collaborative process should result in regulations that are better aligned with the complexities of the market and the needs of both regulators and market participants.

Bridgeway Analytics and its product suite ART provide opinions related to the business implications of regulations and accounting standards. While Bridgeway Analytics aspires to provide accurate and timely information, the nature of distilling information to what we deem as most relevant and the evolving and subjective nature of the rules implies that the data represents our opinion of the rules and not the rules themselves. Users of ART agree to consult their legal, compliance, and accounting professionals before applying any data generated by or resulting from the use of the data in business processes. Bridgeway Analytics does not guarantee the accuracy, adequacy, completeness, timeliness, or availability of data and/or content, and is not responsible for errors or omissions (negligent or otherwise), regardless of the cause, and is not liable for any damages, costs, expenses, legal fees, or losses (including lost income or lost profit and opportunity costs) in connection with any use of the data and/or content.