Spread-Implied Ratings: Implications for insurance capital requirements

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IN BRIEF

- Insurance companies are sensitive to downgrades and impairment losses since both adversely impact capital ratios.
- Spread-implied ratings can be useful in anticipating corporate bond downgrades since the market often adjusts for deteriorating credit worthiness well in advance of rating revisions.
- Using spread-implied ratings, we identified which insurers hold securities that are potential candidates for downgrades and quantified the impact on required capital.

Background

Investment income is a key driver of profitability for life insurers. As interest rates have steadily declined over the past 30 years, so too have the yields on insurers' fixed income portfolios. Insurance companies that have written policies with high effective guarantees (e.g., long-term care and long-duration payout annuities) are sensitive to falling rates since their ability to earn a spread above the guarantee is challenged. In the wake of declining reinvestment rates and increased competition from peers, insurers have looked to levers on both the liability and asset sides of the balance sheet to prevent further spread compression.

Insurers have slowed liability growth by 1) cutting crediting rates on existing policies to near minimum guarantee levels and 2) writing new business with crediting rates that are lower still. On the asset side, insurers have focused on mitigating a reduction in investment income by adding capital efficient sources of yield such as CLOs, income-generating alternatives and principal-protected notes[1]. In addition to exploring new asset classes, insurers have tilted toward higher yielding securities in a core allocation: corporate bonds.

In our recent paper, we showed that life insurers tend to "reach for yield" by purchasing the wider spread corporate bonds within each letter rating. During the decade-long bull run, reaching for yield has worked well from both book yield and total return perspectives. However, employing such a strategy could stress capital requirements if the economy were to enter a recessionary environment with heightened frequencies of downgrades and defaults. In this paper, we quantify the risk present in insurers' corporate bond portfolios and assess the industry's preparedness for a credit market downturn.

[1] Principal-protected notes are structured securities designed to provide insurers with capital-efficient exposure to risk assets, including equities, commodities and derivatives.

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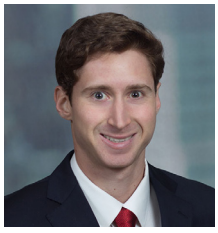

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Defining Risk

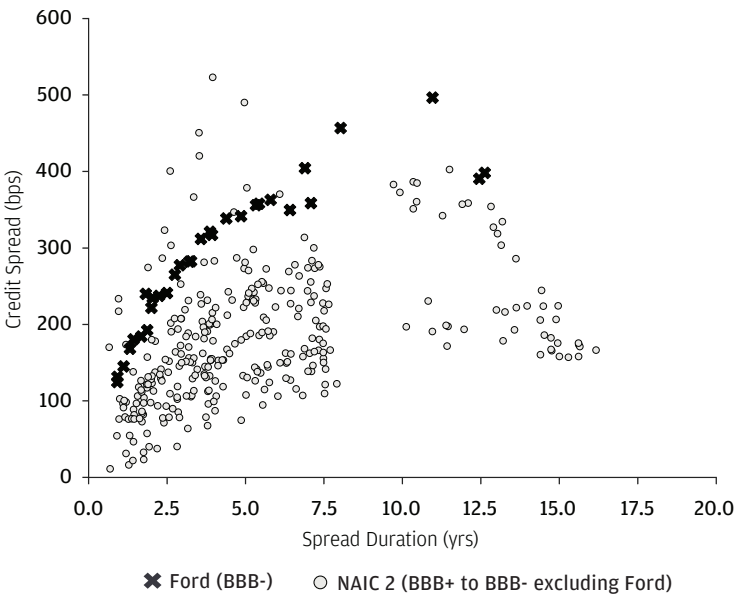
To assess the risk embedded in insurers' corporate bond portfolios, we first need to define an appropriate metric. Selecting a relevant risk metric for life insurance portfolios is more difficult than for other institutional investors since mark-to-market ("MTM") outcomes are of secondary importance for most life insurers. MTM performance tends to be less of a focus since 1) life insurers typically hedge their liabilities with high-quality, "buy-and-hold" portfolios and 2) equity analysts' primary valuation metric for the sector is book value excluding accumulated other comprehensive income (which has low MTM sensitivity[2]).

In our discussions with insurers, downgrades and impairment losses are top of mind as both directly impact solvency ratios. Standard methods practitioners use to stress capital requirements combine 1) ratings issued by nationally recognized statistical ratings organizations ("NRSROs") with 2) historical upgrade and downgrade frequencies to simulate the impact of rating migrations over a fixed horizon. While this type of analysis can be useful in understanding general migration trends, it fails to recognize that current NRSRO ratings may be materially different than the market's view of risk. In particular, ratings revisions are frequently lagging – the market often prices in a downgrade well before the event actually occurs.

A recent example that illustrates the sluggish nature of rating revisions is Moody's downgrade of Ford from investment grade to high yield. Ford has been one of the widest trading investment-grade credits in the consumer cyclical sector since the start of 2019 (see **FIGURE 1**), but it was only downgraded by Moody's in September. Moreover, Ford still maintains investment-grade ratings from S&P and Fitch. Clearly, the market is adjusting for deteriorations in credit worthiness well in advance of rating revisions and there is useful information embedded in spreads (which represent the market consensus) that can help anticipate downgrades and defaults.

To assess risk in a more timely manner, we propose using spread-implied ratings as opposed to NRSRO ratings[3]. Spread-implied ratings are derived directly from market prices and provide faster moving, forward-looking views on risk. The key task in computing spread-implied ratings is determining the boundaries between rating notches. There are several approaches in the literature for establishing the decision boundaries (see Breger et al., 2002 and Kou & Varotto, 2008). However, the prior approaches 1) ignore subsector variation in corporate bond spreads and 2) do not model the boundaries as a continuous function of spread duration (which can be problematic in steep spread curve environments). We build on the existing literature and capture these additional effects by employing a machine learning technique known as softmax regression (or multinomial logistic regression) to estimate spread-implied rating boundaries.

FIGURE 1: FORD (PRE-DOWNGRADE) VERSUS BBB CONSUMER CYCLICALS



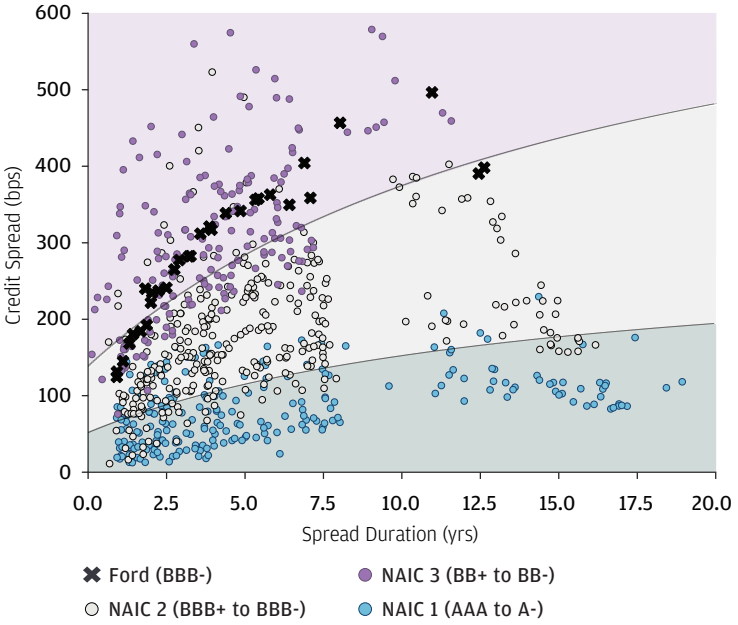
Source: Bloomberg, J.P. Morgan Asset Management; data as of January 31, 2019. The USD BBB consumer cyclical subset of the Bloomberg Barclays Global Credit Index is plotted in light gray. Bonds issued by Ford are shown in black. The securities are shown for illustrative purposes only. Their inclusion should not be interpreted as a recommendation to buy or sell. Past performance is not necessarily a reliable indicator for current and future performance.

FIGURE 2 shows the estimated rating boundaries for the consumer cyclical sector as of January 31, 2019. The boundaries (which are represented by black lines) divide the plot into three regions, each with a different background color. The background colors signify the spread-implied NAIC ratings, while each dot represents an individual security with its color indicating the actual NAIC rating. For the most part, actual ratings and spread-implied ratings are in agreement. However, there are securities with spreads that have drifted from their rating cohort. In particular, most Ford bonds traded well into NAIC 3 territory, despite bearing NAIC 2 ratings. In the next section, we quantify to what extent 1) insurers' corporate bond holdings agree with their spread-implied ratings and 2) the potential impact on required capital if capital charges were based on spread-implied ratings rather than NAIC ratings.

[2] In general, book value excluding accumulated other comprehensive income (AOCI) is not sensitive to market value movements. However, there are certain instances in which market movements would (indirectly) impact book value ex-AOCI. For example, if an insurer must impair a bond due to a large and sustained market value decline (such that principal and interest are no longer expected to be paid in full), the impairment would reduce net income and, ultimately, book value ex-AOCI.

[3] See Norden & Webber (2004) and Kou & Varotto (2008) for in-depth assessments of the timeliness of spreads in anticipating downgrades.

FIGURE 2: SPREAD IMPLIED-RATING BOUNDARIES FOR CONSUMER CYCLICALS



Source: Bloomberg, J.P. Morgan Asset Management; data as of January 31, 2019. Actual and spread-implied ratings are plotted for the USD BB or better consumer cyclical subset of the Bloomberg Barclays Global Credit Index.

Assessing Impact

To determine the impact of spread-implied ratings on required capital, we analyzed holdings reported in the year-end 2018 statutory filings[4]. In particular, we focused on publicly traded U.S. dollar corporate bonds (including 144A securities). We obtained pricing data and analytics for 12,998 unique securities representing 92% of the ~USD1.5T of publicly traded corporates held by life insurers as of December 31, 2018. We refer to the securities for which we obtained analytics as the "Corporate Cohort."

We proceeded to combine market pricing on the Corporate Cohort with our previously discussed rating boundaries to stress life insurers' solvency levels. The primary metric we focused on was required capital. In particular, we calculated changes in required capital for securities in the Corporate Cohort, which helps quantify the extent to which insurers are reaching for yield with their corporate allocations.

FIGURE 3 shows the impact of spread-based ratings on required capital for life insurers with at least USD500mm invested in the Corporate Cohort. **PANEL 3A** plots each insurer's weighted average capital charge on securities within the Corporate Cohort under two methodologies: 1) using reported NAIC ratings from the statutory filings and 2) using spread-implied NAIC ratings. The black line represents the parity line, which is the outcome that would be achieved if NAIC ratings perfectly matched the spread-implied ratings. However, few companies fall along this line. Most insurance companies lie above the line, indicating that they would be required to hold more capital if charges were based on market spreads. It is worth noting that many of the insurers with high reported capital charges would be hit the hardest by a transition to spread-based ratings. These companies have corporate portfolios that are predominantly NAIC 2/BBB and face particularly punitive increases in required capital (~3.5x) for downgrades to NAIC 3/BB (see **TABLE 1**).

PANEL 3B provides additional information on the distribution of changes in required capital. The majority of insurers would experience capital charge increases, with the bulk falling between 0 and 10 basis points. However, there is a long tail of insurers with pronounced increases in required capital. We noticed that these insurers have significant allocations to the subordinated debt of other financial institutions, which tend to trade wide relative to their ratings.

While the corporate risk appears material for certain insurers, we acknowledge that they may be well capitalized or have relatively small corporate allocations, which would mitigate the company-level solvency ratio impact. With this in mind, we note that focusing on corporate bonds in isolation may not tell the full story. However, since corporates are a significant portion of the industry's holdings, we believe that they warrant a thorough risk assessment and that spread-implied ratings can provide a useful tool to better understand risk-taking in the industry.

U.S. Regulatory Capital

Insurance companies are required to hold excess capital based on the ratings of their investments. Lower rated assets require higher levels of capital. **TABLE 1** provides an overview of post-tax capital charges by rating.

An insurer's solvency ratio ("RBC ratio") is defined as available capital ("Total Adjusted Capital") divided by required capital ("Risk Based Capital"). Insurers typically target Company Action Level RBC ratios of >400% to receive investment-grade ratings from rating agencies.

TABLE 1: CAPITAL CHARGES BY RATING[5]

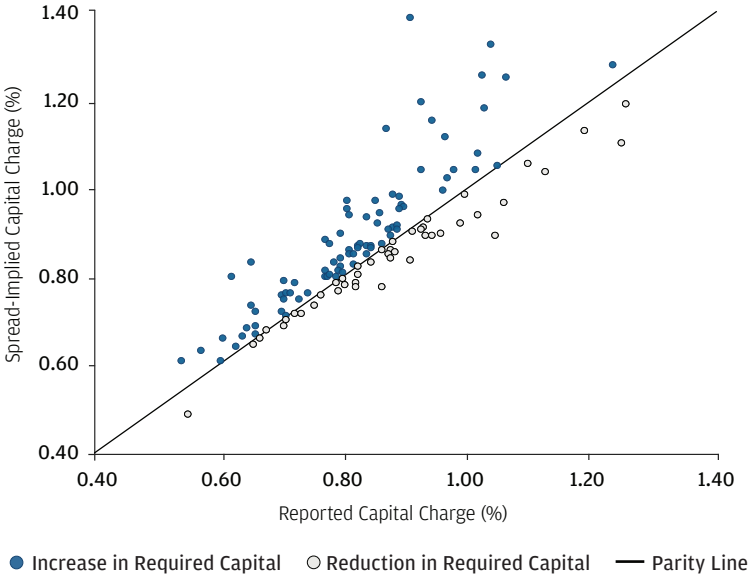
NAIC Rating	NRSRO Rating	Post-tax Capital Charge (%)
1	AAA, AA, A	0.33
2	BBB	1.06
3	BB	3.76
4	B	8.18
5	CCC	18.79
6	<CCC, Equity	23.70

[4] The statutory filings are required to be submitted by all U.S.-domiciled insurance companies. As part of the filing, insurers must include schedules of assets.

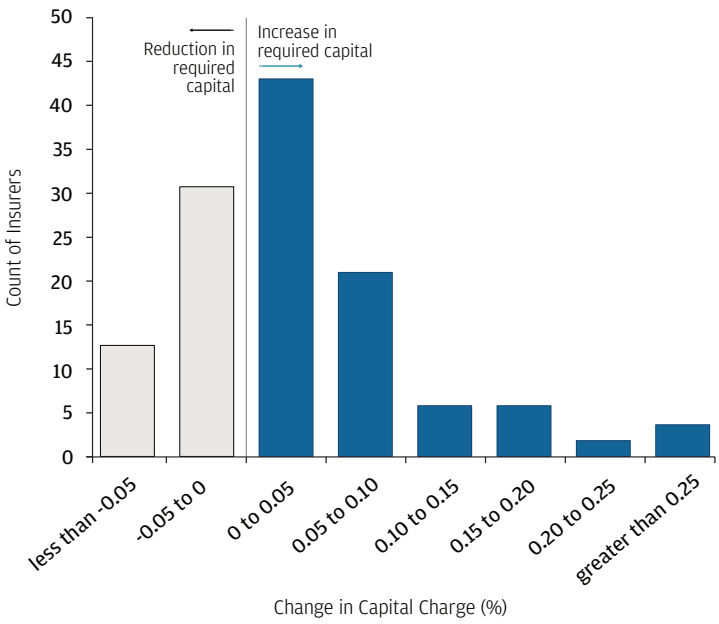
[5] For publicly traded corporate bonds, NAIC ratings are typically based on conservative NRSRO ratings. If a bond is rated by two NRSROs, then the lowest rating is used. If a bond is rated by three or more NRSROs, then the second lowest rating is used.

FIGURE 3: IMPACT OF SPREAD-IMPLIED RATINGS ON REQUIRED CAPITAL

PANEL 3A



PANEL 3B



Source: Bloomberg, SNL Financial, J.P. Morgan Asset Management; data as of December 31, 2018. Plots show the impact of spread-implied ratings on post-tax corporate bond capital charges for the life insurers with at least USD500mm allocated to securities within the Corporate Cohort.

Conclusion

U.S. life insurers have increasingly looked to optimize their capital-adjusted yields against the backdrop of falling interest rates. Given that capital charges are the same for all corporate bonds of the same NAIC rating, many insurers have tilted toward the higher spread securities within each rating notch in an effort to slow the decline in investment income (see our recent paper). While a yield-seeking strategy has worked well over the decade-long bull run, portfolios could be at risk if there were a noticeable increase in downgrades and defaults. In particular, securities that currently appear cheap from a yield versus capital perspective could turn out to be quite expensive. Using spread-implied ratings, we identified which insurers hold securities that are potential candidates for downgrades and quantified the impact on required capital.

If you work at an insurance company and are interested in seeing detailed results for your company or a peer group, please contact your J.P. Morgan Asset Management client advisor or email Insurance Strategy and Analytics@jpmorgan.com.

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