PGIM FIXED INCOME

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Securitized Credit: A Closer Look at CLO Tranche Investing

Following is an interview with Edwin Wilches, Portfolio Manager for PGIM Fixed Income's U.S. Bank Loan and Structured Products teams. Given recent headlines regarding the weakening quality of leveraged loans, we sat down with Mr. Wilches to address the potential impact on Collateralized Loan Obligation (CLO) tranche investing and get his insight on these topical investments.

Question 1: Leveraged loans are generating some pessimistic headlines globally. Do you share these concerns and, if so, do you have similar concerns about the quality of CLOs? How is this affecting investor demand?

With respect to leveraged loans, we share many of the concerns that have been expressed in recent months. These include the erosion of covenants, the proliferation of loan-only capital structures, and the deterioration of EBITDA quality, factors which typically emerge in the later stages of a credit cycle. However, it is important to distinguish between the risk profile of various tranches in a CLO and the risk profile of the underlying leveraged loans. Specifically, we believe the rising likelihood of lower recoveries on defaulted leveraged loans in the next cycle is likely to have the greatest impact on CLO mezzanine tranches and subordinate notes. PGIM Fixed Income is primarily invested in senior CLO tranches, where we believe we can achieve attractive risk-adjusted returns due to structural protections that mitigate the sensitivity to losses in the loan market itself. In fact, senior CLO tranches remain one of our highest conviction overweights across fixed income.

Paradoxically, despite the negative headlines related to levered loans themselves, we saw an increasing number of asset managers, insurance companies, and hedge funds enter the CLO tranche market in 2017 and 2018. These new entrants invested across the CLO capital structure—from AAA to equity—drawn to the asset class by the floating-rate nature of the securities and wide nominal spread levels. More recently, investor interest in CLOs has waned as the sell-off in the fourth quarter of 2018 created opportunities in other areas of the fixed income markets, and investor preferences shifted from floating-rate securities to fixed-rate securities after the Federal Reserve pivoted to a more dovish outlook in early 2019.

Question 2: What is driving your conviction on senior CLO tranches?

Like many of our favorite investments, our preference for senior CLO tranches comes down to our assessment of risk-adjusted returns. As articulated in our white paper, "*The Compelling Case for Global Senior CLOs*" (*May 2017*), we view the structural features of CLOs as providing meaningful protection to senior tranches from credit losses in the event of a market downturn.

Currently, the wide spreads available on AAA/AA CLOs look compelling relative to other fixed income assets that have greater sensitivity to credit migration and credit losses. Additionally, CLOs provide our multi-sector fixed income and corporate bond portfolios with diversification benefits relative to other fixed income alternatives, including low correlation and healthy liquidity. Given these combined features of CLOs—spread, credit protection, and diversification—we believe they are likely to outperform comparable spread risk assets in a market downturn.

Question 3: What is PGIM Fixed Income's high-water mark with regard to CLO exposure?

All of the portfolios we manage begin with a risk budget that includes an allowance for spread risk, and our objective is to maximize a portfolio's risk-adjusted returns subject to meeting our alpha objective. Consequently, our high-water mark in terms of CLO exposure varies considerably by type of mandate. Some of our portfolios, including several multi-sector fixed income portfolios, do not explicitly cap CLO exposure, but even then, the amount of CLOs owned in any particular portfolio is constrained by the overall risk budget. Additionally, the value we perceive in other securities that vie for that same risk budget, and the diversification benefits from non-CLO investments, also serve as governors of overall CLO exposure. We also carefully consider cross-asset correlations and the perceived liquidity of various sectors in different market environments.

FIGURE 1: CLO CAPITAL STRUCTURE

Tranche Name	Credit Quality	Enhancement	
A	AAA	62% of Deal 38% Enhancement	**Senior Debt** • Pays before other tranches— Do not "PIK". Minimal credit exposure
B	AA	13% of Deal 25% Enhancement	
C	A	7% of Deal 18% Enhancement	**Mezzanine Debt** • Tranches are "PIKable" • More susceptible to credit losses
D	BBB	5% of Deal 13% Enhancement	
E	BB	5% of Deal 8% Enhancement	
Equity	Equity	8% of Deal	**Equity** • High current cash flow— first loss

Source: PGIM Fixed Income. For illustrative purposes only.

Question 4: How will a CLO tranche with 38% credit enhancement hold up in the next market downturn? How protected would the AAA-rated CLO tranche be? Does the same hold true for AA-rated tranches?

We believe the built-in structural protections of senior CLO tranches (AAA/AA), such as credit enhancement and cash-flow diversion covenants, will insulate them from suffering significant, if any, principal write-downs in the next credit downturn.

- **Credit Enhancement:** Following the financial crisis, CLOs underwent structural changes that predominantly favored senior CLO debt investors. These changes were driven by new regulations, rating agency model refinements, and debt investor requirements. Most notably, the credit enhancement required for the senior-most U.S. CLO tranches rose from about 23% to almost 38%, meaning the collateral would need to suffer more than a 38% cumulative principal loss before the senior tranche experienced a dollar of loss.[1]

- **Cash-Flow Diversion Covenants:** The debt covenants in CLO structures begin to divert excess interest cash flows from subordinated tranches once realized or expected losses on the underlying collateral increase beyond certain thresholds (performance triggers). These diversions of interest begin to amortize the senior-most (AAA) tranche. The cash flow diversion covenants are in place to preemptively pay down debt, first on AAA tranches, then the next subordinated tranche, to allow the structure to "self-heal." If losses continue to increase, principal received from underlying recoveries is also used to pay down the debt tranches, beginning with the senior-most tranche.

[1] *The additional 15% cushion means that the senior-most tranche can sustain 30% more underlying loan defaults, assuming a loan recovery of 50%.*

AAA Tranches Are the First Class to be Repaid and the Last Class to Sustain Losses

The breakeven loss analysis shown in Figure 2, below, illustrates how these protections may work under 60%, 40%, and 20% loan recovery scenarios. (For comparison, U.S. loan recoveries average about 66% historically while 2009 recoveries averaged 62%.[2]) As you can see,

- Assuming a 60% recovery rate, it would take a 47.8% annual default rate (3.7x the worst experience in 2009) to incur the first $1 of loss principal to the AAA tranche.
- Assuming a 40% recovery rate, it would take a 23.9% annual default rate to incur the first $1 of loss principal to the AAA.
- Assuming a 20% recovery rate, it would take a 15.5% annual default rate to incur the first $1 of loss principal to the AAA.

FIGURE 2: 2018 VINTAGE CLO 2.0 BREAKEVEN LOSS ANALYSIS

Assumption		Market Experience	Annualized Default Rate Required, at Given Severity, to Lose $1 of AAA Principal		
		Historical Market Case (JPM Data)	Breakeven at a 60% Loan Recovery Rate	Breakeven at a 40% Loan Recovery Rate	Breakeven at a 20% Loan Recovery Rate
Annualized Prepayment Rate		20.0%	10.0%	10.0%	10.0%
Annualized Default Rate		3.5%	47.8%	23.9%	15.5%
AAA CLASS	WAL (# of years)	6.2	2.1	3.0	3.8
	Tranche Writedown (%)	0.0%	0.01%	0.01%	0.01%

Source: PGIM Fixed Income as of December 31, 2018. Data Source: J.P. Morgan as of December 31, 2018. Information is provided for informational purposes only to illustrate our stress test process. These examples are not actual results. Actual results may vary substantially. It is not an offer or solicitation to buy or sell any securities.

AA Tranches Are the Second Class to be Repaid

AA CLO tranches are riskier than AAA tranches because they are the second class to be repaid, but with a 25% credit enhancement on a typical deal, we believe they are more vulnerable to downgrade risk and marked-to-market volatility than to principal losses. It is worth noting that both AAAs and AAs are "non-PIKable" tranches and receive current period interest, whereas tranches rated single-A and lower will PIK interest in some scenarios, which increases the risk of those lower-rated tranches in a downturn.[3]

Question 5: Headlines claim the CLO market could be the next "investment bubble". Do you agree?

No. We think of "investment bubbles" as being characterized by irrational valuations and extremely poor risk profiles. While there are parts of the CLO capital structure that we believe to be overvalued—mezzanines and equity—we do not believe that current valuations are remotely close to bubble territory. Rather, we believe such headlines are driven by an improper conflation of CLOs/leveraged loans with mortgages and subprime securitizations circa 2006/2007. Such comparisons are misguided for several reasons. First, the market capitalization of CLOs backed by leveraged loans was approximately $600 billion as of March 31, 2019, while the market capitalization of the leveraged loan market was roughly $1.2 trillion.[4] If CLOs were truly in bubble territory, we would expect the CLO share of the leveraged loan market to be closer to 100%. Second, we do not view the CLO market as remotely

[2] *Source: J.P. Morgan, January 1998 to February 2019.*

[3] *Similar to some leveraged loans and high yield bonds securities, some CLO tranches have a structural feature where, under specific circumstances, their interest is deferred, and they instead receive a Payment in Kind ("PIK"). This PIK is effectively an IOU from the issuer be paid to the tranche at a later date, to the extent the issuer's circumstances permit. Securities with this feature are not considered to be in default when cash interest is missed.*

[4] *Source: Bank of America/Merrill Lynch.*

systemic at $600 billion in market value. By comparison, the market value of the private label mortgage market, a key contributor to the 2008/2009 financial crisis, was north of $2.3 trillion at its peak in 2007.[5] Lastly, spreads on AAA and AA CLOs remain well wide of previous cycle tights, which is inconsistent with the definition of an investment bubble.

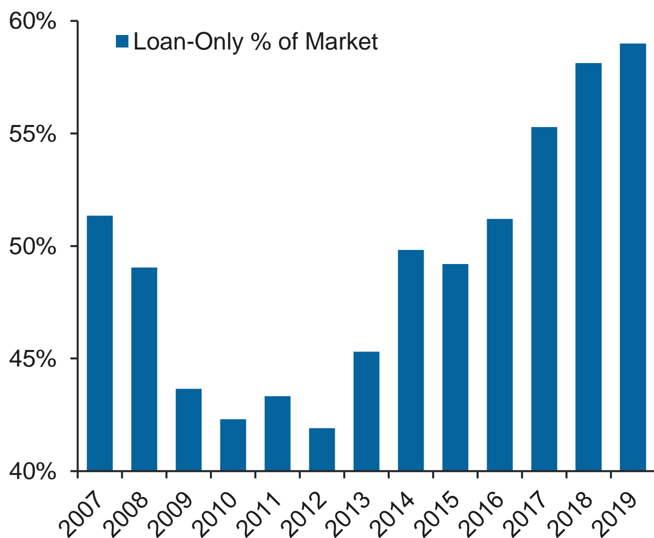
Question 6: Why do you expect loan recoveries to be lower in the next market downturn?

As the most senior secured part of an issuer's capital structure, U.S. leveraged loans have experienced about a 66% average recovery of principal in the event of a default, a higher rate than their high yield bond counterparts.[6] While the U.S. loan default rate in 2019 is projected to remain low at just 1.5%—and even lower in Europe at about 0.5%[7]—an uptick in more aggressive loan underwriting standards, combined with the extended length of the current cycle, could result in lower loan recoveries in the next downturn. As such, intense bottom-up fundamental research and ongoing surveillance are integral parts of our investment process.

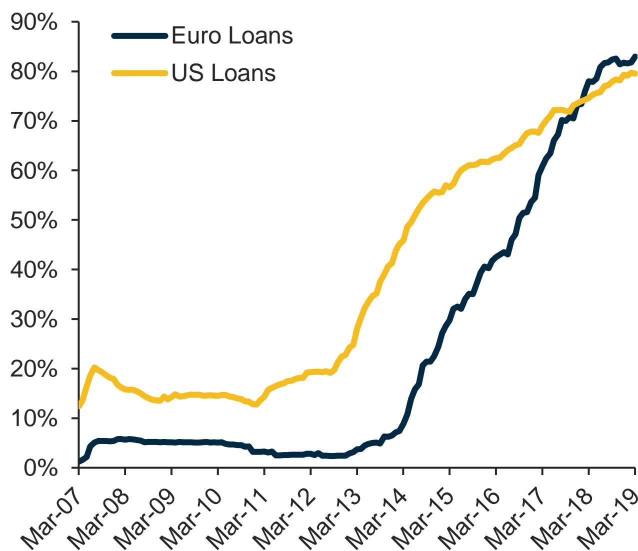
Factors Impacting Leveraged Loan Credit Quality

- Comparable-to-higher headline leverage ratios for loan issuers relative to the end of the prior credit cycle. U.S. and European leverage ratios stood at 5.4x and 5.6x, respectively, as of March 31, 2019 vs. 4.9x and 5.9x at year-end 2007.[8] Actual leverage ratios today may be higher, however, due to the increase of EBITDA add-backs being assumed.
- A change in many loan issuers' capital structures that largely eliminated subordinated high yield bonds, resulting in more "loan-only" capital structures;
- A proliferation of underlying credit agreements that provide private equity sponsors with greater flexibility (looser covenants);
- Higher incidence of covenant-lite loans that do not require loan issuers to renegotiate loan terms with creditors (traditionally after a covenant breach.) Instead, issuers are allowed to keep operating the company (and spending more cash), which could further reduce the value of the company.

U.S. LOAN-ONLY ISSUERS AS % OF MARKET



COVENANT-LITE LOANS AS % OF MARKET



Sources for both charts: Credit Suisse, PGIM Fixed Income as of March 31, 2019.

[5] Source: J.P. Morgan, CoreLogic as of December 31, 2007.
[6] Source: J.P. Morgan, January 1998 to February 2019.
[7] Source: J.P. Morgan as of March 1, 2019.
[8] Source: S&P Global Market Intelligence. Represents total debt/EBITDA.

Question 7: Why is an analysis of the CLO asset management team an important part of your research process?

Given our concerns on segments of the leveraged loan market, it is important to understand the quality of a CLO's management team together with the CLO tranche's relative spread value, structural nuances, and covenants. Indeed, as leverage loan quality has weakened, CLO manager selection has taken on greater importance. In the recent low-default environment, CLO managers with higher spread portfolios have generally outperformed up-in-quality CLO managers given that returns have been comprised primarily of coupon income. This dynamic could change quickly in favor of active, credit-focused CLO managers should defaults increase and principal losses are reflected in loan total returns.

Our CLO manager due diligence process focuses on five key capabilities: credit, performance, technology/operations, compliance, and organizational structure (private, public, employee-owned). Overall, we prefer to invest in CLO managers that have a portfolio construction approach characterized by strong industry diversification and robust credit underwriting. Another important criteria is ensuring the CLO indenture and structure are appropriate for a manager's capabilities and experience. We believe less experienced CLO managers, or those with relatively fewer resources, should have tighter debt covenants and provide additional spread compensation.

CLO spread differentiation is not only influenced by macro factors but also by the "tiering" of CLO asset managers by market participants. The manager's reputation, experience, and market perception drive the ultimate spread level and terms. For example, investors may demand less spread if the manager is perceived to be a top-tier, household name.

We generally do not invest in CLO tranches of managers that favor highly concentrated portfolios (low diversity) or frequently interpret CLO covenants in favor of equity investors at the expense of debt investors. We have also not purchased some top-tier managers' deals if we believe they are more equity friendly, run more aggressive underlying portfolios, or have relatively loose CLO debt covenants. In addition, we do not invest in middle-market CLOs.

Question 8: What differentiates PGIM Fixed Income from other CLO tranche asset managers?

- PGIM Fixed Income is a global asset manager offering active solutions across all fixed income markets. We invest in both the primary and secondary CLO markets with $34 billion in CLO tranche investments under management as of March 31, 2019.[9] Our deep, experienced, and fully-integrated structured products, global leveraged finance, and quantitative analysis and risk management teams provide in-depth analysis and broad perspectives.
- We utilize a disciplined, integrated approach to CLO tranche investing, combining intensive asset-level corporate credit research with robust quantitative tools and thorough documentation analysis. Along with our rigorous due diligence on the collateral managers, this research enables us to analyze CLOs in a holistic manner and select what we consider to be the most attractive risk-adjusted securities for clients.
- As a long-standing leveraged loan and CLO tranche asset manager, as well as a CLO collateral manager, we have strong partnerships with primary and secondary broker dealers which we believe helps to facilitate efficient execution and can provide access to narrowly-distributed opportunities.

[9] *Source: PGIM Fixed Income.*

NOTICE: IMPORTANT INFORMATION

Source(s) of data (unless otherwise noted): PGIM Fixed Income as of May 1, 2019.

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