S&P Global
Ratings

Private Credit And Middle-Market CLO Quarterly: Shelter From The Storm

Q1 2024

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This report does not constitute a rating action

Q1 2024 Update | Private Credit And Middle-Market CLOs

Credit-Estimated Companies Under Stress

Along with record U.S. middle-market (MM) collateralized loan obligation (CLO) issuance and corresponding growth in our number of credit-estimated companies, **2023 saw record credit-estimate downgrades, driven by a steep rise in benchmark rates of about 500 basis points (bps) during the year**. Although credit-estimated companies have initiated cost-cutting measures and brought in efficiencies, higher interest costs continue to depress margins and pose liquidity challenges. For the year, **S&P Global Ratings lowered estimates on a total of 276 entities, representing 15% of the total actions taken (see slide 13). The remainder of the estimate actions were either upgrades (5%) or affirmations (80%).**

We expect to see continued downgrades and selective defaults on credit-estimated companies in 2024. However, we think the downgrade momentum is likely to slow down this year, with more certainty around rates and execution of asset sales and transactions during the year. For recurring revenue loan issuers, downgrades outpaced upgrades by about six-to-one in 2023. **Recurring revenue loans represent about 5% of our current credit estimates, with more than 75% of these having a credit estimate score in the 'ccc' range (see slide 9).**

Selective defaults, driven primarily by maturity extensions and instances of partial or full payment-in-kind (PIK), also remain elevated (slide 16). Asset sales and private equity (PE) exits are getting pushed back as buyers and sellers fail to agree on valuations, and we're seeing more amendments to extend near-term maturities. Acute liquidity issues for some borrowers are causing lenders to allow for a partial or full PIK of their interest on their term loans.

Among rated loan issuers, **the LSTA Leveraged Loan Index default hit 2.05% at the end of 2023, up from 0.68% at the start of the year**, not counting selective defaults. S&P Global Ratings forecasts defaults among loan issuers to reach 3% by September 2024, excluding selective defaults. The historical average default rate for the leveraged loan market is 2.67%, and the average default rate over the last decade has been 1.83%.

MM CLOs See Robust Issuance

MM CLOs continue to grow as a proportion of the U.S. CLO market. In recent years, MM CLOs have accounted for somewhere between 9% and 12% of total U.S. CLO issuance volume, **but 2023 was different, with 23.4% of issuance volume coming from the private credit space**. In a year where broadly syndicated loan (BSL) CLO issuance saw a 24.2% decline in issuance (to $88.7 billion) amidst limited corporate loan supply and challenged new issue CLO economics, MM CLOs surged to $27.1 billion, a 126.2% increase over 2022 (see slide 18).

This growth is due to an expanding MM CLO buyer base as investors take note of higher spreads and CLO tranche subordination. Fear of missing out (FOMO) is also a factor, with some investors working to get internal approval for MM CLO purchases before spreads tighten. We also **think the strong performance MM CLO ratings showed during the pandemic played a role**. In conversations we've had with MM CLO issuers, some tell us they plan to increase their use of CLOs as a means of diversifying their funding sources for direct lending, and many investors have told us they plan to increase allocations; so in the nexus between these two things, we expect continued growth from the MM CLO space.

Q1 2024 Update | Private Credit And Middle-Market CLOs

MM CLOs Collateral Metrics Still Relatively Stable

Many credit-estimated companies are feeling the strains of higher interest rates and slowing growth, and **credit estimate downgrades have picked up materially in recent quarters. But so far, MM CLO metrics are doing relatively well (see slide 19).** Exposure to 'CCC' assets, which started 2023 at 9.5%, ended the year at just over 14.0%--a significant increase to be sure, but proportionally less than the increase seen in BSL CLO collateral pools. This leaves the average MM CLO with some cushion before breaching the typical excess 'CCC' asset threshold of 17.5%, while the average BSL CLO is already slightly breaching its 'CCC' limit (7.67% at year-end 2023 versus a typical threshold of 7.5%).

Other MM CLO metrics are also holding steady. The average S&P Global Ratings' weighted average rating factor (SPWARF)--a measure of rating quality of the companies in the collateral pool, with a lower number indicating higher ratings--was 3909 at the end of 2023, slightly worse than the 3778 seen at the start of the year. **Nonperforming assets remain low at 0.43%, in part because MM CLO managers can swap out distressed assets and replace them with stronger ones**, and because middle-market companies tend to see selective defaults rather than conventional defaults (see slide 16). The average MM CLO has built up and maintained a par level slightly above target par (101.07%), and the average junior overcollateralization (O/C) test cushion is 6.82%, only a modest decline from the average cushion at the start of 2023 (7.07%). By way of comparison, the average BSL CLO saw a drop to a 4.08% cushion today from 4.95% at the start of 2023.

We Expect Stable MM CLO Ratings Performance

Our outlook for MM CLO ratings continues to be mostly benign, despite the uptick in credit estimate downgrades. MM CLOs saw zero downgrades during 2023, continuing a "no downgrade" streak that began in fourth-quarter 2020 (see slide 30). We attribute this strong rating performance to a variety of factors, including CLO structural reasons: MM CLOs tend to have more par subordination and rating cushion at a given tranche level than a typical BSL CLO, and MM CLOs sometimes don't issue lower-rated ('BBB' and 'BB') tranches, which would be more likely to experience downgrades than more senior tranches when a CLO comes under stress. **Our scenario analysis for MM CLO ratings (slides 31-32) shows that they can withstand considerable defaults with limited CLO rating impact.** Under our most punitive scenario, which assumes 30% of collateral defaults with a 45% recovery, no CLO tranche rated 'A' or higher defaults, and nearly 99% of CLO 'AAA' ratings are either affirmed (no downgrade) or are lowered by one notch.

Assuming we're correct in our economic outlook, we expect MM CLO ratings to remain stable in 2024. To the extent we see MM CLO downgrades, these should be limited to subordinate tranches of transactions showing obvious signs of distress. Given the limited diversity in some MM CLO collateral pools, however, distress or default of a single obligor can have a material impact. To that end, we noted a significant drop in junior overcollateralization (O/C) ratio cushion for several MM CLOs last quarter after the sales of an assets at a distressed prices. The ratings assigned to these CLOs, however, were not affected.

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Credit Metrics | Median Leverage And Interest Coverage By Sector

Metrics for companies with credit estimates updated during 2023

S&P Global Ratings-calculated leverage ratios (after factoring in the higher benchmark rate) for the top 10 most represented sectors

Industry	Median of debt/EBITDA (x)	Number of obligors
Software	7.98	241
Healthcare providers and services	7.25	215
Commercial services and supplies	6.33	136
Professional services	5.68	118
IT services	7.07	79
Media	6.16	73
Diversified consumer services	7.29	72
Construction and engineering	5.74	68
Healthcare equipment and supplies	6.52	62
Health care technology	6.96	57

Source: S&P Global Ratings.

S&P Global Ratings-calculated interest coverage ratios (after factoring in the higher benchmark rate) for the top 10 most represented sectors

Industry	Median interest coverage (x)	Number of obligors
Software	1.06	241
Healthcare providers and services	1.41	215
Commercial services and supplies	1.59	136
Professional services	1.76	118
IT services	1.42	79
Media	1.68	73
Diversified consumer services	1.33	72
Construction and engineering	1.70	68
Healthcare equipment and supplies	1.52	62
Health care technology	1.35	57

Source: S&P Global Ratings.

Credit Metrics | Year-Over-Year Deterioration In Leverage And Coverage

Metrics for companies with credit estimates updated during 2022 vs. 2023

Change in median leverage for the top 10 most represented sectors

Industry	% change from 2022	Number of obligors
Healthcare providers and services	+14%	215
Media	+13%	73
Diversified consumer services	+11%	72
Construction and engineering	+10%	68
Health care technology	+9%	57
IT services	+8%	79
Software	+1%	241
Healthcare equipment and supplies	+0%	62
Commercial services and supplies	+0%	136
Professional services	-5%	118
Average (of all sectors)	**+7%**	**38**

Source: S&P Global Ratings.

Change in median interest coverage for the top 10 most represented sectors

Industry	% change from 2022	Number of obligors
Diversified consumer services	-35%	72
Health care technology	-30%	57
Construction and engineering	-30%	68
Healthcare providers and services	-30%	215
IT services	-29%	79
Healthcare equipment and supplies	-28%	62
Media	-26%	73
Software	-25%	241
Commercial services and supplies	-24%	136
Professional services	-22%	118
Average (of all sectors)	**-28%**	**38**

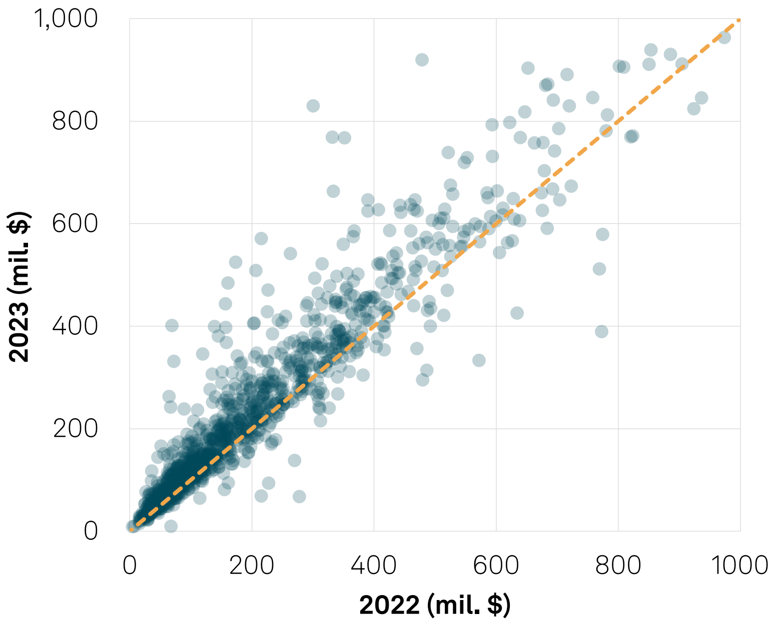
Source: S&P Global Ratings.

Credit Metrics | Revenue And Leverage Trends

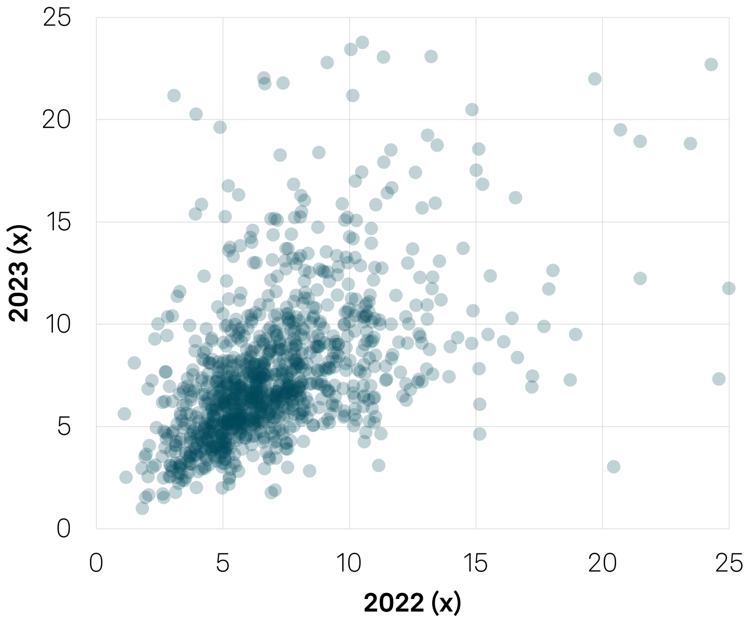
- Each point in the scattergrams represents a credit-estimated company that was reviewed both in 2022 and 2023. Points above the trendline indicate growth in revenue and leverage.
- Our sample size included over 1,150 credit estimates, more than half of the credit estimate portfolio.

Change in metrics for credit-estimated obligors (2022 reviews vs. 2023 reviews)

Revenue: 2022 vs. 2023



Leverage: 2022 vs. 2023



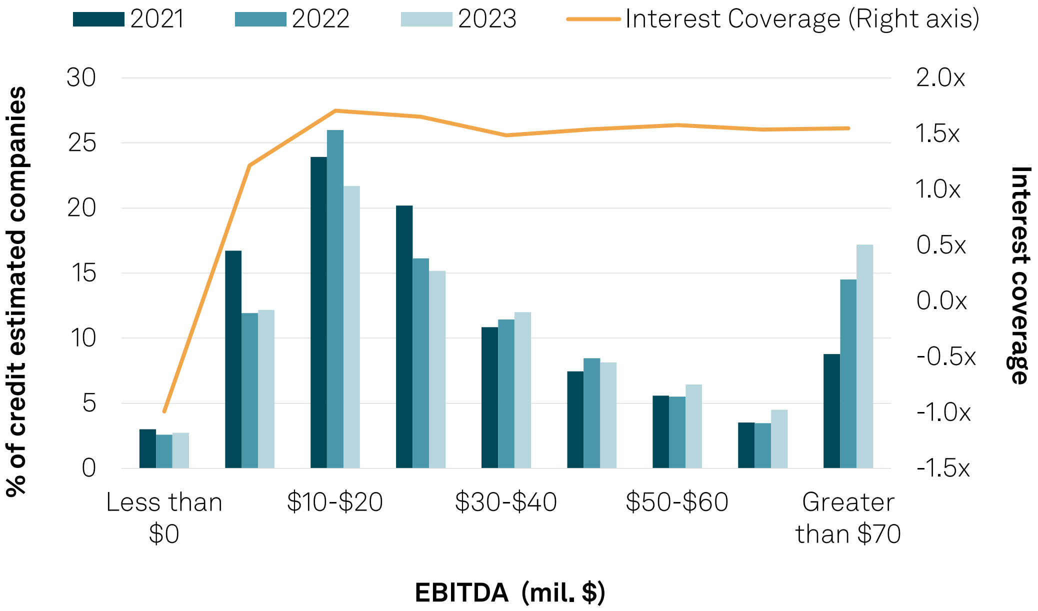
Source: S&P Global Ratings.

- For reviews done in 2023, revenue has continued to grow due in part to acquisitions.
- Revenue and EBITDA increased year over year in 80% and 59% of cases, respectively. Still, leverage increased in 53% of cases.
- For reviews done, median revenue and EBITDA increased by 22% and 32%, respectively, while leverage went up by 30%.
- In 25% of the cases, revenue increased and EBITDA declined, representing a higher sensitivity to inflation.
- In less than 5% of the sample, revenue declined but EBITDA increased, indicating better cost control.

Credit Metrics | EBITDA And Free Operating Cash Flow Distribution

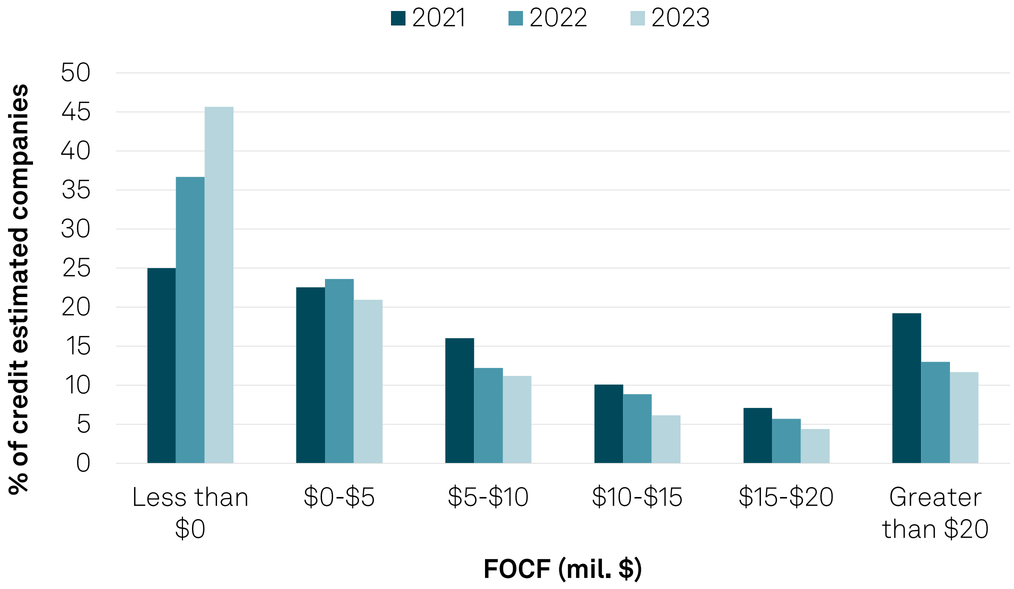
- Roughly 3% of companies reviewed in 2023 generated negative EBITDA .
- Of the companies with recurring revenue loan structures, 36% generated negative EBITDA (more on recurring revenue on slide 9).
- About 45% of companies reviewed during the same period generated negative free operating cash flow (FOCF) (post-application of higher benchmark rates).

EBITDA



Source: S&P Global Ratings.

Free operating cash flow

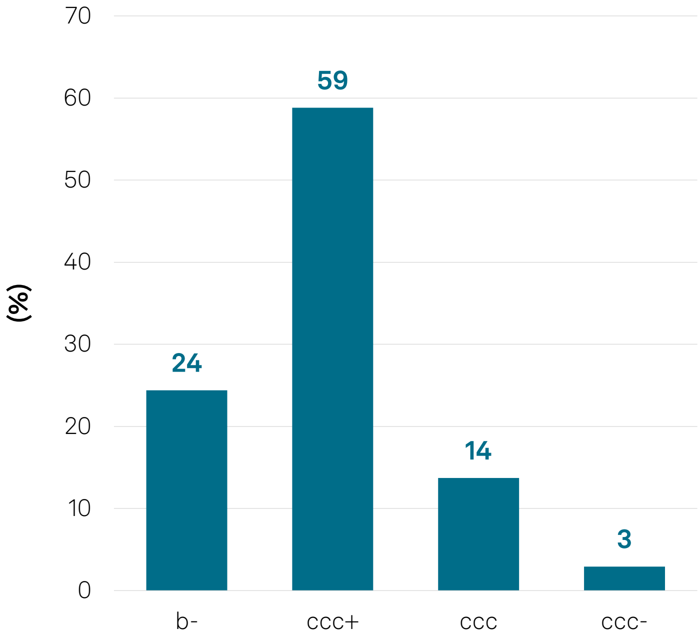


Source: S&P Global Ratings.

Recurring Revenue | Credit Metrics

- Recurring revenue companies represent a small proportion (<5%) of our outstanding credit estimates, typically for software companies.
- These companies use revenue-based leverage rather than EBITDA for covenant compliance.

Recurring revenue score distribution



Credit metrics: Recurring revenue deals

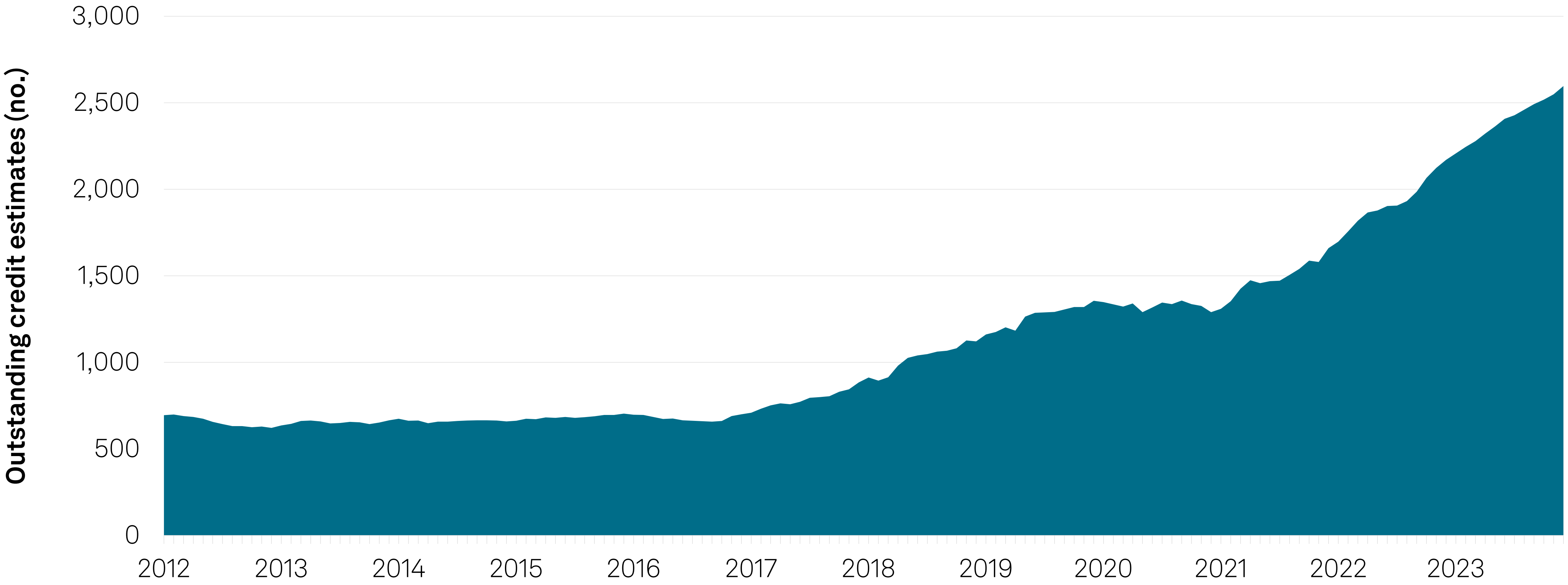
Metrics (median)	Total outstanding
No. of deals	100
EBITDA (mil. $)	4.91
Leverage	38.71
Cash interest coverage	0.28x
Interest coverage	0.22x
Capex (mil. $)	1.85
FOCF to debt (%)	-7.64
Liquidity ratio	1.88

- In a higher-for-longer rate environment, increased debt servicing charges will exert pressure on recurring-revenue companies to prioritize liquidity.
- This may be at the expense of upfront investments and could affect their long-term trajectory and growth.
- Recurring revenue deals compare unfavorably on metrics such as EBITDA and FOCF compared to other middle-market deals.
- They tend to have higher LTVs and a higher sponsor equity contribution.

Capex—Capital expenditure. FOCF—Free operating cash flow. Source: S&P Global Ratings.

Credit Estimates | Growth In Outstanding Credit Estimates

All outstanding S&P Global Ratings credit estimates (2012–Q4 2023)*



*Covers all outstanding S&P Global Ratings U.S. credit estimates, including a small number of estimates for obligors not currently held within a CLO transaction. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

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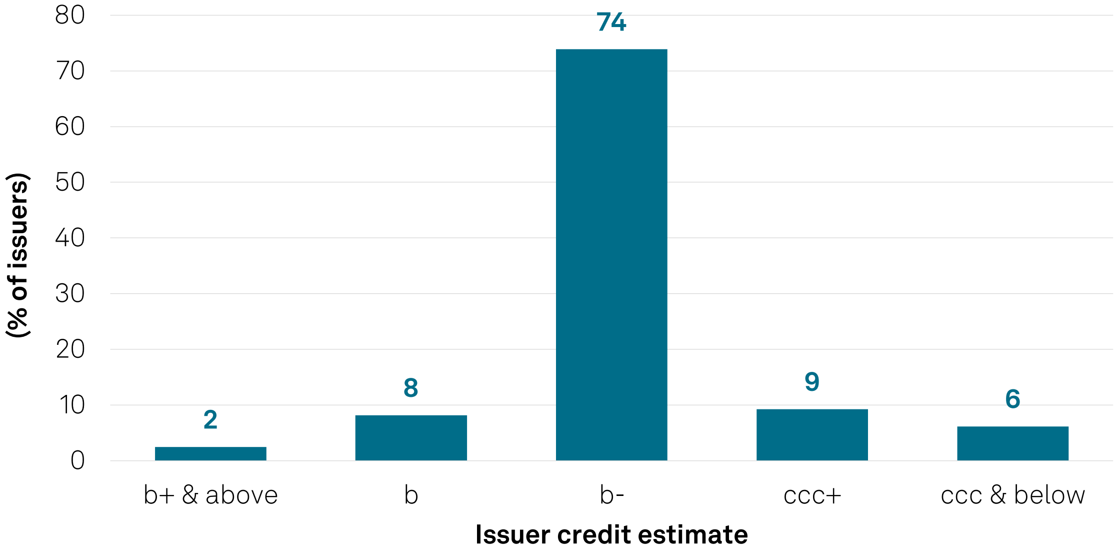
Credit Estimates | Credit Estimate Scores As Of Fourth-Quarter 2023

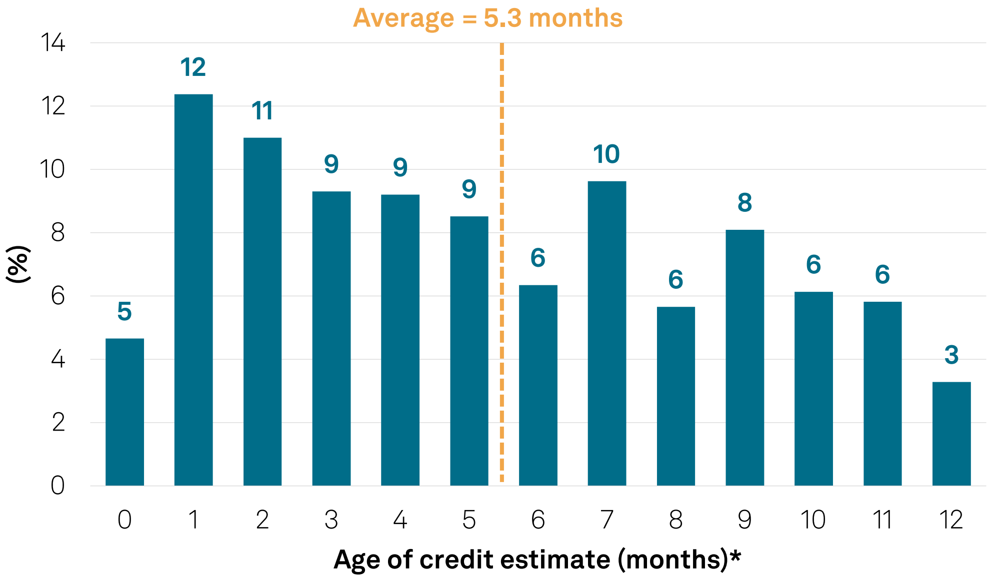
- Many of the companies we assign credit estimates to are financial sponsor-owned and generally highly levered.
- For credit-estimated companies reviewed in 2023, the median EBITDA was $29 million, and the median adjusted debt was about $190 million.
- Due to their weaker business and financial risk profiles, a large majority of these companies tend to have credit estimate scores at the lower end of the credit spectrum, especially ‘b-’.
- Credit estimates are updated at least every 12 months, but, in practice, the average time since last review of outstanding estimates is shorter, at just over five months.

Credit estimates outstanding as of fourth-quarter 2023*



*Covers all outstanding S&P Global Ratings U.S. credit estimates (estimates less than one year old), including estimates for obligors not currently held within a CLO transaction. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

Credit estimates by number of months since last update*



*Covers all outstanding S&P Global Ratings U.S. credit estimates (less than one year old), including estimates for obligors not currently held within a CLO transaction. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

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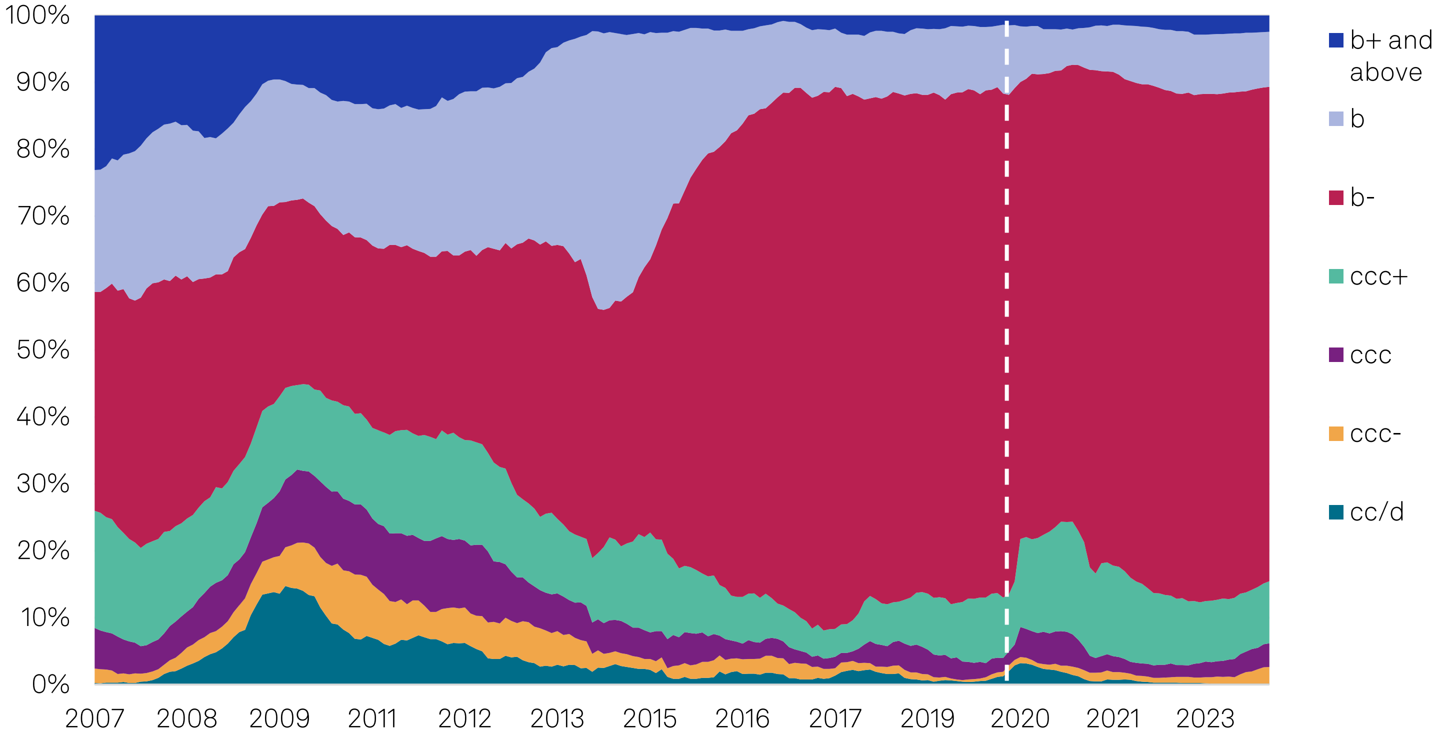
Credit Estimates | Credit Quality Over The Years

Outstanding credit estimate distribution by issuer count (2007–Q4 2023)*



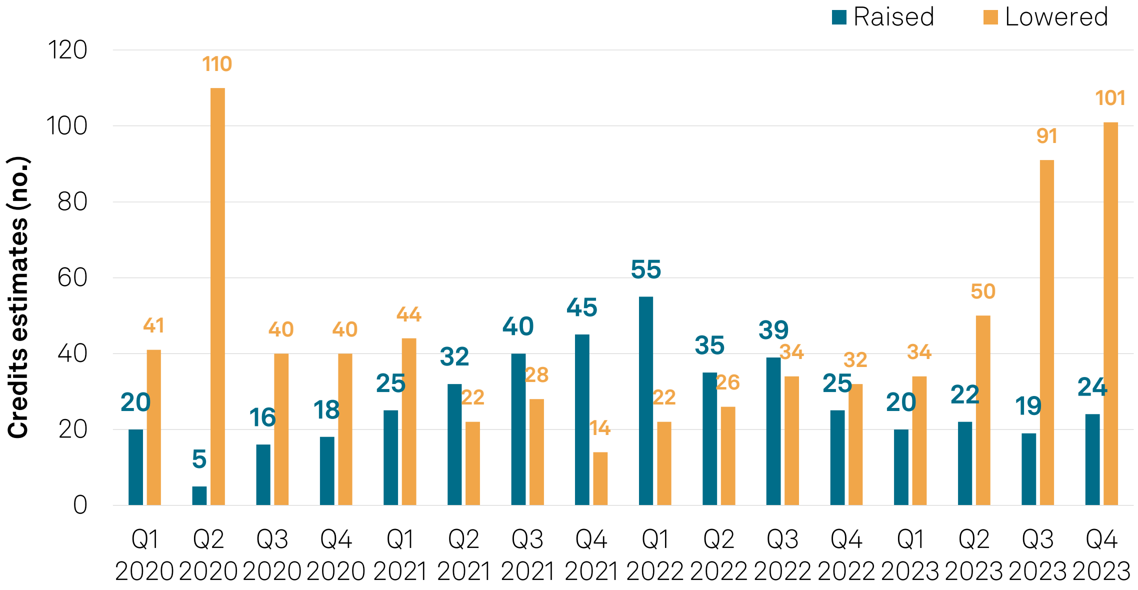
*Covers all outstanding S&P Global Ratings U.S. credit estimates, including estimates for obligors not currently held within a CLO transaction. CLO--Collateralized loan obligation.
Source: S&P Global Ratings.

- Before the pandemic, about 75% of our outstanding credit estimates were ‘b-’.
- This dropped to about 71% after the pandemic induced downgrades of ‘b-’ credit estimates into the ‘ccc’ category.
- By 2023, over 74% of outstanding credit estimates were back at ‘b-’ as performance of companies rebounded, and many obligors saw their credit estimates raised back to ‘b-’ from the ‘ccc’ range.

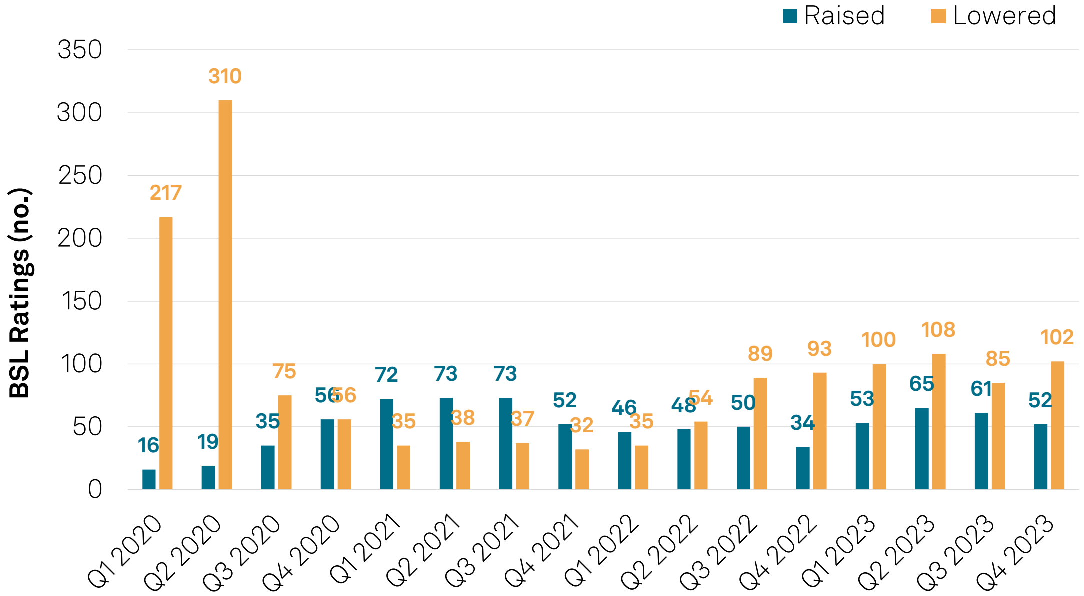
Upgrades And Downgrades | Credit Estimate Changes Vs. BSL Rating Changes

- 2023 saw record downgrades eclipsing 2020. However, the downgrades-to-upgrade ratio of 3.2 remains less than the 2020 metric, 3.9.
- For the companies reviewed during the year, 80% were affirmed, 15% were downgraded, and 5% were upgraded.
- In the fourth quarter of 2023, we saw the highest number of credit estimate downgrades since the second quarter of 2020.

Credit estimates raised and lowered (Q1 2020-Q4 2023)



BSL Ratings raised and lowered (Q1 2020-Q4 2023)



Beginning in second-quarter 2023, we have excluded upgrades/downgrades outside the construct of a CLO. CLO--Collateralized loan obligation.
Source: S&P Global Ratings.

Upgrades And Downgrades | Credit Estimates Raised And Lowered By Sector

85 upgrades in 2023(i)

Top five sectors upgraded	Overall percentage of upgrades (%)	Sector exposure of total credit estimates (%)	Count of obligor (no.)
1 Commercial services and supplies	12.9	7.2	11
2 Software	10.6	12.7	9
3 Healthcare providers and services	7.1	11.4	6
4 Hotels, restaurants, and leisure	7.1	2.7	6
5 Media	4.7	3.9	4

276 downgrades in 2023

Top five sectors downgraded	Overall percentage of downgrades (%)	Sector exposure of total credit estimates (%)	Count of obligor (no.)
1 Healthcare providers and services	16.7	11.4	46
2 Software	14.5	12.7	40
3 Commercial services and supplies	6.2	7.2	17
4 Media	4.3	3.9	12
5 Health care technology	4.3	3.0	12

(i)Beginning in second-quarter 2023, we have excluded upgrades/downgrades outside the construct of a CLO. CLO--Collateralized loan obligation.

`Source: S&P Global Ratings.

Credit-estimate downgrades increased substantially in the second-half of 2023, due to:

- Upcoming maturities with no refinancing plans in place.
- Negative FFO because of higher interest rates.
- Unsustainable capital structures with high leverage.
- Repeated covenant breaches.
- Inflation, resulting in increased wages and material costs.

Upgrades And Downgrades | Does Company Size Affect Performance?

- There is not a strong correlation between the size of a company and its credit quality.

Debt size of downgrades

	All 2023 CEs	Downgraded CEs	% difference
Median debt size	190	239	+26%
Average debt size	335	359	+7%

CE--Credit estimate. Source: S&P Global Ratings.

Debt size of defaults

	All 2023 CEs	Defaulted CEs	% difference
Median debt size	190	179	-6%
Average debt size	335	248	-26%

CE--Credit estimate. Source: S&P Global Ratings.

EBITDA size of downgrades

	All 2023 CEs	Downgraded CEs	% difference
Median EBITDA size	29	19	-34%
Average EBITDA size	44	28	-36%

CE--Credit estimate. Source: S&P Global Ratings.

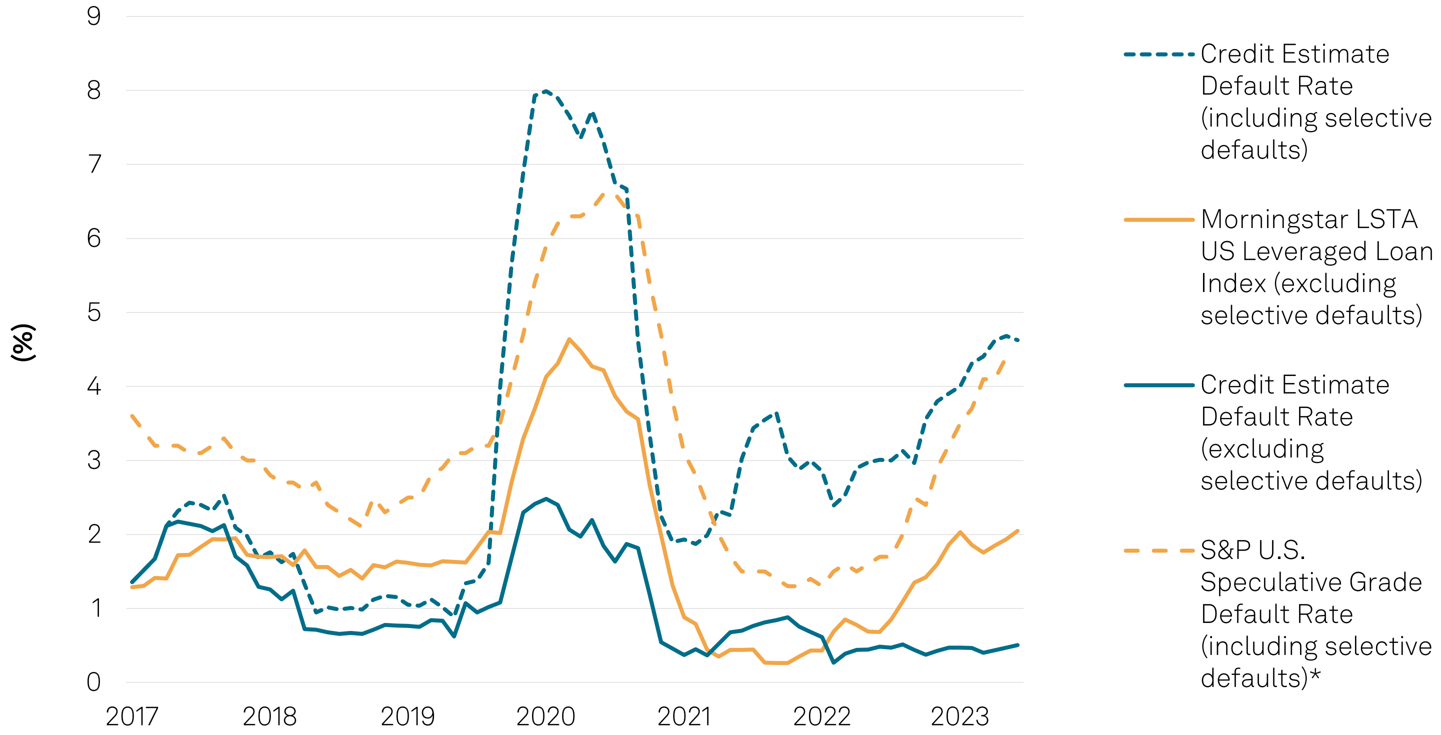
EBITDA size of defaults

	All 2023 CEs	Defaulted CEs	% difference
Median EBITDA size	29	17	-41%
Average EBITDA size	44	26	-41%

CE--Credit estimate. Source: S&P Global Ratings.

Defaults | Credit-Estimated Companies Have Higher Selective Defaults But Fewer Conventional Defaults

Credit estimate default rates (with and without SDs) compared to conventional defaults on loans (LSTA Index) and overall SG default rate (including SDs)



*The data for the S&P U.S. Speculative Grade Default Rate is through Nov. 30, 2023. SD--Selective default. SG--Speculative grade. Source: S&P Global Ratings and Pitchbook/LCD.

- The dashed blue line in the chart, which includes both selective and conventional defaults among credit-estimated issuers, has trended up towards 5%, as selective defaults picked up during the second half of the year when distressed companies addressed liquidity concerns with A-to-E or interest deferral. The S&P U.S. Speculative Grade default rate has also ticked up (both defaults and selective defaults) and is expected to reach 5% by September 2024 on a trailing 12-month basis.
- Defaults have begun to pick up in the syndicated loan market as well. In December 2023, the trailing 12-month Morningstar LSTA U.S. Leveraged Loan Index default rate reached 2.05%, the highest since late 2021.
- Other default studies’ calculations may differ because of methodology and sample use.

Defaults | Credit Estimate Selective Defaults Grow

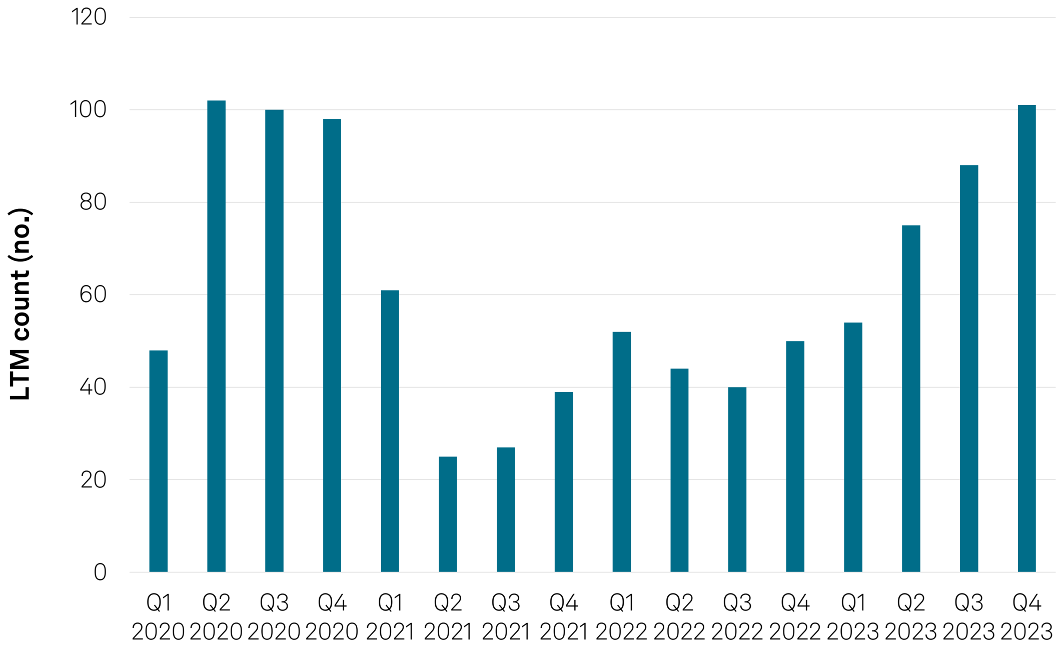
- The biggest reasons for selective defaults were A-to-E transactions followed by interest deferrals.
- Close to 70% of selective defaults that occurred in the ‘b-’ category were reassessed at the ‘ccc’ category post-selective default.

Transition table for credit estimate selective defaults that occurred in 2023

Credit estimate score post-selective default

Credit estimate score pre-SD	b	b-	ccc+	ccc	ccc-	cc
b		1				
b-		13	9	7	12	
ccc+		2	6	6	1	
ccc		1	1	11	2	4
ccc-			4	2	5	

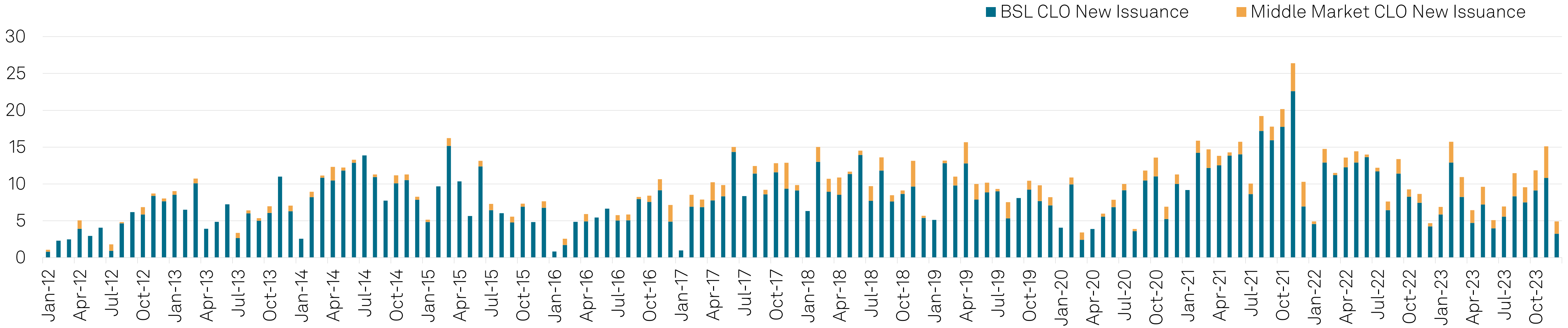
LTM count of selective defaults (Q1 2020 – Q4 2023)



SD--Selective default. LTM--Last 12 months. Source: S&P Global Ratings. As of fourth-quarter 2023, we are still receiving selective default notices from managers and incorporating them into our dataset.

Issuance | Middle-Market CLO Issuance Increased By 126% In 2023

U.S. BSL CLO and middle-market CLO new issuance by month (2012–2023) (bil. $)



U.S. CLO issuance, 2012 through 2023 (bil. $)

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Change
New Issue	BSL CLOs	$50.11	$78.12	$117.78	$93.76	$64.01	$103.58	$112.88	$103.65	$82.21	$164.97	$116.99	$88.71	-24.1%
	MM CLOs	$4.15	$4.31	$6.32	$5.15	$8.28	$14.49	$15.97	$14.82	$11.33	$22.53	$11.98	$27.10	126.2%
	Total New Issue	$54.26	$82.43	$124.10	$98.91	$72.30	$118.07	$128.86	$118.47	$93.54	$187.49	$128.97	$115.81	-10.1%
	MM CLO %	7.6%	5.2%	5.1%	5.2%	11.5%	12.3%	12.4%	12.5%	12.1%	12.0%	9.3%	23.4%	
Reset/Refi	BSL CLOs	$0.00	$0.00	$0.00	$0.00	$39.73	$161.53	$151.97	$41.33	$30.39	$237.61	$17.35	$21.55	24.2%
	MM CLOs	$0.00	$0.00	$0.00	$0.00	$0.00	$5.48	$3.92	$2.46	$1.09	$13.70	$7.42	$3.05	-58.9%
	Total Resets/Refis	$0.00	$0.00	$0.00	$0.00	$39.73	$167.01	$155.89	$43.79	$31.48	$251.31	$24.77	$24.60	-0.7%

Source: S&P Global Ratings, Pitchbook LCD.

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CLO Performance | ‘CCC’ Buckets Increase, Other Metrics Stable

- The increased count of lowered credit estimates in the third and fourth quarters (slide 13) have resulted in a notable increase in ‘CCC’ buckets as well as default buckets across MM CLO portfolios.
- In a small handful of instances, portfolio par loss, haircuts from defaults and excess ‘CCC’ exposures have resulted in O/C numerator haircuts, leading to a decline in junior O/C test cushions.
- However, the average MM CLO junior O/C test cushion still remains at 6.8%.

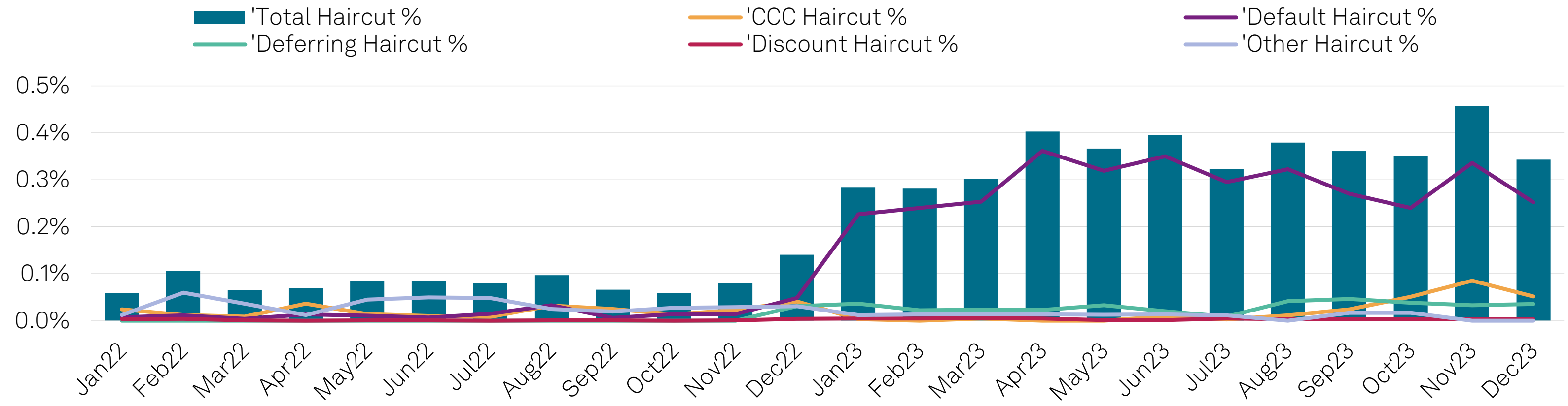
Credit metrics averaged across 65 reinvesting S&P Global Ratings-rated middle-market CLOs

As of date	'B-' (%)	'CCC' category (%)	No rating/CE (%)	Nonperforming assets (%)	SPWARF	Jr. O/C cushion (%)	% of target par
12/31/2022*	73.68	9.47	5.81	0.16	3778	7.07	101.02
1/31/2023*	74.12	9.52	5.65	0.18	3778	7.08	101.02
2/28/2023*	73.63	9.41	5.97	0.26	3787	7.07	101.01
3/31/2023*	73.63	9.46	6.01	0.23	3788	7.05	101.01
4/30/2023*	73.75	9.68	6.19	0.23	3798	7.04	101.01
5/31/2023*	73.55	9.66	6.53	0.23	3807	7.07	101.03
6/30/2023*	73.26	10.25	6.14	0.24	3806	7.00	101.04
7/31/2023*	72.46	10.97	6.31	0.23	3825	7.03	101.07
8/31/2023*	72.04	11.80	5.86	0.41	3842	6.95	101.10
9/30/2023*	71.74	12.35	6.18	0.39	3861	6.91	101.11
10/31/2023*	70.46	13.50	6.54	0.42	3887	6.84	101.07
11/30/2023**	69.61	14.25	6.68	0.43	3906	6.82	101.07
12/20/2023***	69.36	14.03	7.14	0.43	3909	6.82	101.07

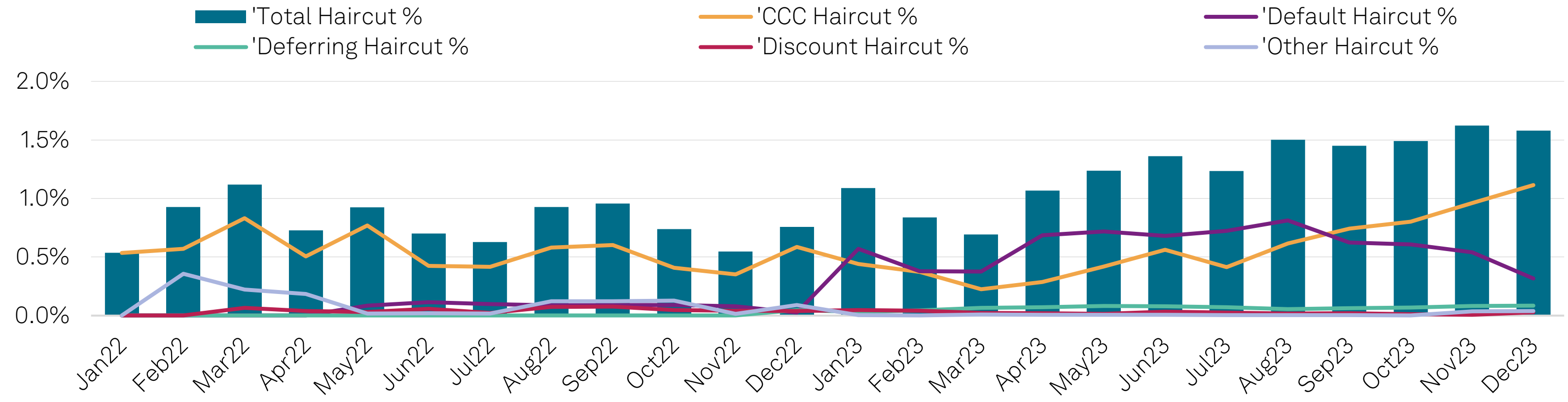
*Index metrics based on end of month ratings and pricing data and as of month portfolio data available. **Index metrics based on Nov. 30, 2023, ratings and pricing data and latest portfolio data available to us. ***Index metrics based on Dec. 20, 2023, ratings and pricing data and latest portfolio data available to us. SPWARF—S&P Global Ratings’ weighted average rating factor. O/C--Overcollateralization. Source: S&P Global Ratings.

CLO Performance | O/C Test Haircuts Remain Modest

Average O/C metrics for reinvesting U.S. MM CLOs



Average O/C metrics for amortizing U.S. MM CLOs



O/C—Overcollateralization. MM--Middle market. Source: S&P Global Ratings.

- O/C cushions across reinvesting U.S. MM CLOs have declined slightly since the start of the year; though on average, they still remain positive at just under 7% as of the end of 2023.
- The O/C haircuts for the reinvesting U.S. MM CLOs mostly come from default exposures; most reinvesting deals are not close to breaching their 'CCC' thresholds, though a few transactions exceeded their 'CCC' thresholds (most deals have a 17.5% 'CCC' threshold).
- O/C haircuts across amortizing U.S. MM CLOs are larger relative to the reinvesting transactions; both default exposures and excess 'CCC' exposures contribute a large majority of the haircuts.
- Despite the higher average haircuts, the junior O/C cushions for amortizing transactions are higher than reinvesting transactions due to senior note paydowns.

BSL And MM CLOs | Comparing Middle-Market CLOs To BSL CLOs

	Broadly syndicated loan CLOs (BSL CLOs)	**Middle-market loan CLOs (MM CLOs)**
Outstanding Amount (Q4 2023)	About $875 billion	About $125 billion
Size of median CLO (par $)	About $500 million	About $475 million

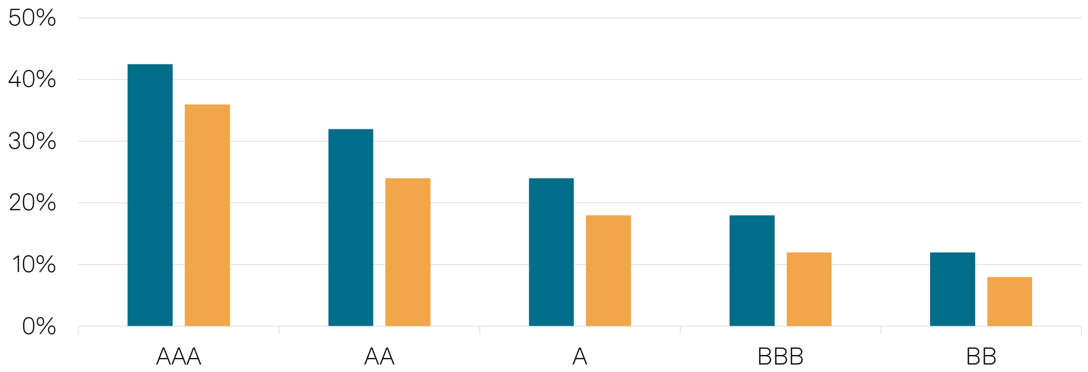
Collateral attributes	Senior secured loans to larger companies:
	• EBITDA greater than $100 million; and,
	• Loan facility sizes greater than $500 million.
		Senior secured loans to smaller companies:
		• Loan facility sizes of $50 million to $300 million
		• Issuer EBITDA sizes of:
		  • < $20 million (lower middle market)
		  • $20 to $50 million (core middle market)
		  • $50 to $100 million (upper middle market)

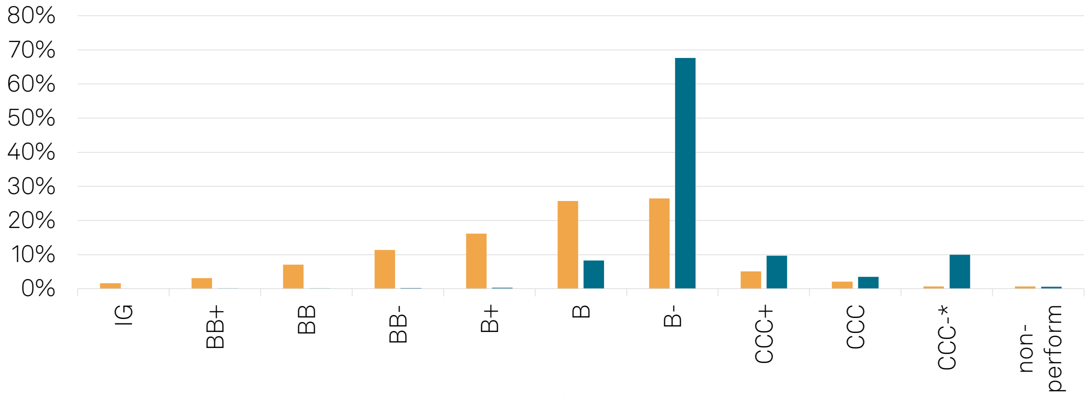
Source of CLO collateral	BSL CLO managers purchase the loans for their CLOs in the open market to create a portfolio	Some MM CLO managers (or their affiliates) are direct lenders and issue some/most of the loans in their CLOs
Typical issuer motivation	BSL CLO managers typically use BSL CLOs to build assets under management and generate fee income	Most MM CLO managers use CLOs to fund their direct lending and maintain diverse funding sources
CLO manager relationship with borrower	Investor	Direct lender or Investor
Risk retention	U.S. BSL CLOs are generally not subject to risk retention since the manager acquires the loans in the open market	MM CLOs are generally subject to risk retention since the manager is the issuer of some/all the loans in the CLO
Loan covenants	Covenant-lite loans are the norm (80% plus of BSL loan market) along with looser provisions	A large majority of loans in MM CLOs have maintenance covenants, Generally, the smaller the loan, the more likely it is to have covenants/restrictive provisions.
CLO equity holder	Historically most BSL CLO managers have placed CLO equity with third-party investors (although this was less true in 2023)	Most MM CLO managers hold their CLO equity, although some now have third-party equity in their CLOs.
Junior-most 'AAA' subordination	Typically ranges from 34% to 39% (median is 36%)	Typically ranges from 40% to 46% (median is 42.5%)
Source of ratings/implied ratings	S&P Global Ratings has ratings on more than 95% of BSL loan issuers	Credit estimates typically cover > 60% of the issuers in MM CLOs
Typical spreads of loans within portfolio	SOFR+350 to SOFR+400	SOFR+550 to SOFR+600
Maturity of loans	Loans in BSL CLOs have an average of maturity of 4.4 years	Loans in MM CLOs have an average of maturity of 3.5 years
Number of obligors in CLO pool	Varies, but average is 310 obligors	Varies, but average is 108 obligors
Number of industries in CLO pool	Typical BSL CLO has loans from ≈ 24 industry sectors	Typical MM CLO 15 to 20 industries

Source: S&P Global Ratings.

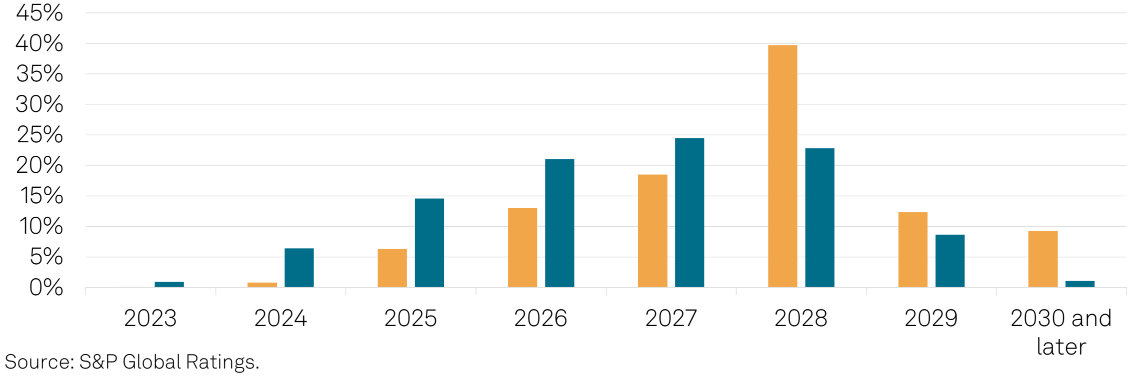
BSL And MM CLOs | Comparison Of Metrics

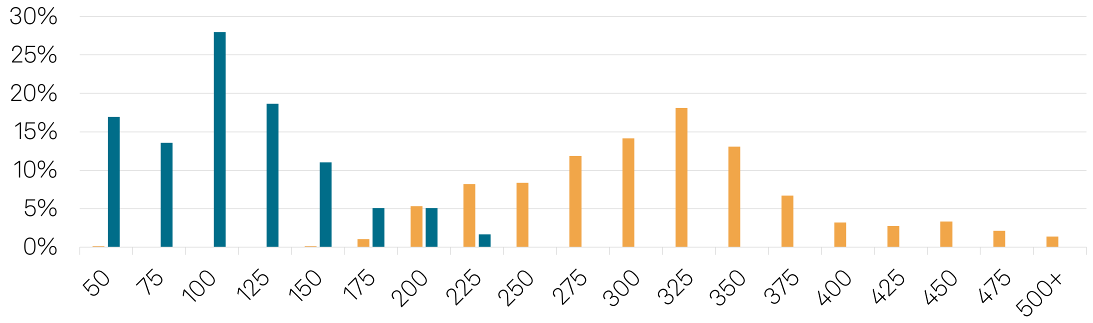
🟦 Middle-market CLOs 🟧 Broadly syndicated loan CLOs


Median subordination of CLO tranches


Ratings distribution of CLO obligors

*Exposures with no S&P derived rating included as ‘CCC-’


Maturity distribution of CLO assets

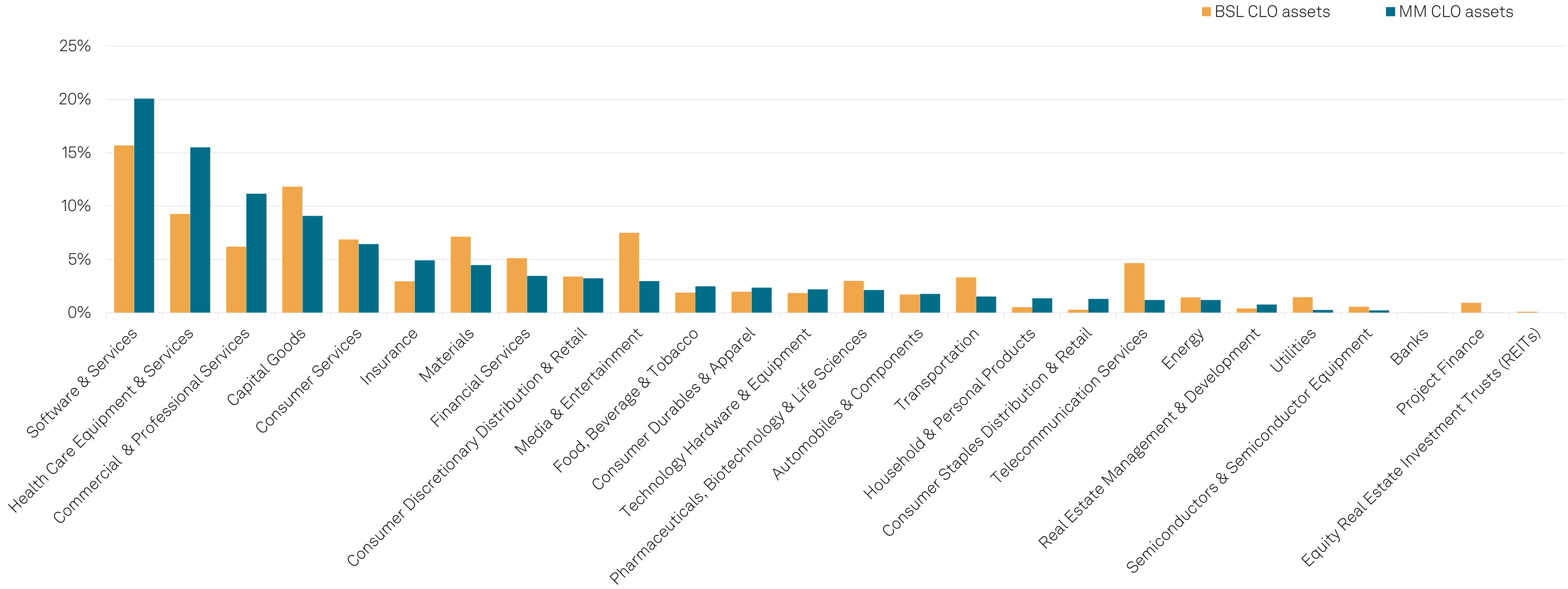

Number of obligors in each reinvesting CLO

Source: S&P Global Ratings.

S&P Global
Ratings

BSL And MM CLOs | GICS Industry Groups

GICs Industry Groups distribution across MM CLO and BSL CLO collateral pools



MM--Middle market. BSL--Broadly syndicated loan. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

Managers | Fourth-Quarter 2023 Manager Metrics (1 of 2)

Manager (No. S&P MM CLOs)	Largest GICS Industry (%)	Largest GICS Industry	GICS industries (No.)	Largest issuer exposure (%)	Issuers (No.)	Issuers credit estimated (No.)	Downgrades in 2023 (No.) (i)	Upgrades in 2023 (No.) (i)	Credit estimated issuers (%)	Proportion credit estimated in Q4 2023 (%)	SPWARF (ii)	WAS (%)	WAM (years)	% of MM CLO assets unique to manager	Manager with largest overlap	Proportion overlap (%)
Alliance Bernstein (13)	30.95	Software	20	1.87	139	117	21	6	89.70	7.35	3947	5.67	3.63	49	Blackrock	6.26
Angelo Gordon/ Twin Brook (2)	22.63	Healthcare providers and services	32	2.31	93	86	5	3	92.46	0.11	3849	6.02	2.42	85	Maranon	1.49
Antares (12)	12.46	Healthcare providers and services	47	1.09	337	279	47	16	90.81	15.49	3904	5.40	3.05	31	Churchill	12.88
Apollo (1)	12.64	Professional services	17	5.37	27	24	4	1	88.97	0.21	3880	5.64	3.62	20	Midcap	13.09
Ares (7)	15.22	Software	38	1.90	233	142	23	6	59.38	2.66	3938	5.36	3.41	25	Audax	12.62
Audax (6)	14.96	Software	39	0.97	290	74	15	3	22.49	0.88	3728	4.66	3.94	29	Monroe	15.07
Bain (3)	9.95	Software	31	3.35	71	53	6	2	80.02	1.10	4053	6.05	4.01	42	Antares	11.18
Barings (5)	16.71	Software	38	2.38	162	113	24	7	82.38	2.13	3975	5.42	3.23	35	Churchill	9.73
Blackrock (8)	26.21	Software	39	1.49	182	131	30	6	74.52	3.49	3936	5.82	3.86	30	Ares	9.80
Blue Owl (22)	19.67	Software	41	1.99	221	134	29	11	80.01	8.67	3861	5.92	3.96	40	Antares	9.25
BMO (4)	16.48	Healthcare providers and services	42	1.62	148	122	22	5	85.63	0.76	4263	5.25	2.77	50	Antares	6.31
Brightwood (3)*	20.90	Healthcare providers and services	23	5.36	56	41	12	2	85.01	0.74	3831	6.52	2.55	60	KCAP/Garrison	4.93
Carlyle (1)*	11.98	Software	26	3.45%	60	48	9	5	83.63	0.49	4032	6.15	3.46	13	First Eagle/ NewStar	4.54
Churchill (6)	9.62	Healthcare providers and services	45	1.30	254	192	31	9	79.61	2.26	3973	5.34	3.50	28	Antares	12.88
Deerpath (6)	17.01	Healthcare providers and services	38	2.20	140	102	14	4	84.27	2.89	3881	5.91	3.10	75	BMO	3.73

(i) Based on quarterly exposure to companies with credit estimates raised and lowered during the quarter, summed across all four quarters in 2023. (i)Assets without credit estimate (or other derived S&P Global Ratings' credit rating) treated as 'ccc-' for purposes of SPWARF calculation. Includes both rated and credit estimated obligors. * All portfolios across rated transactions are amortizing. MM--Middle-market. CLO--Collateralized loan obligation. SPWARF--S&P Global Ratings weighted average rating factor. WAS--Weighted average spread. WAM--Weighted average maturity. CE--Credit estimate. Source: S&P Global Ratings.

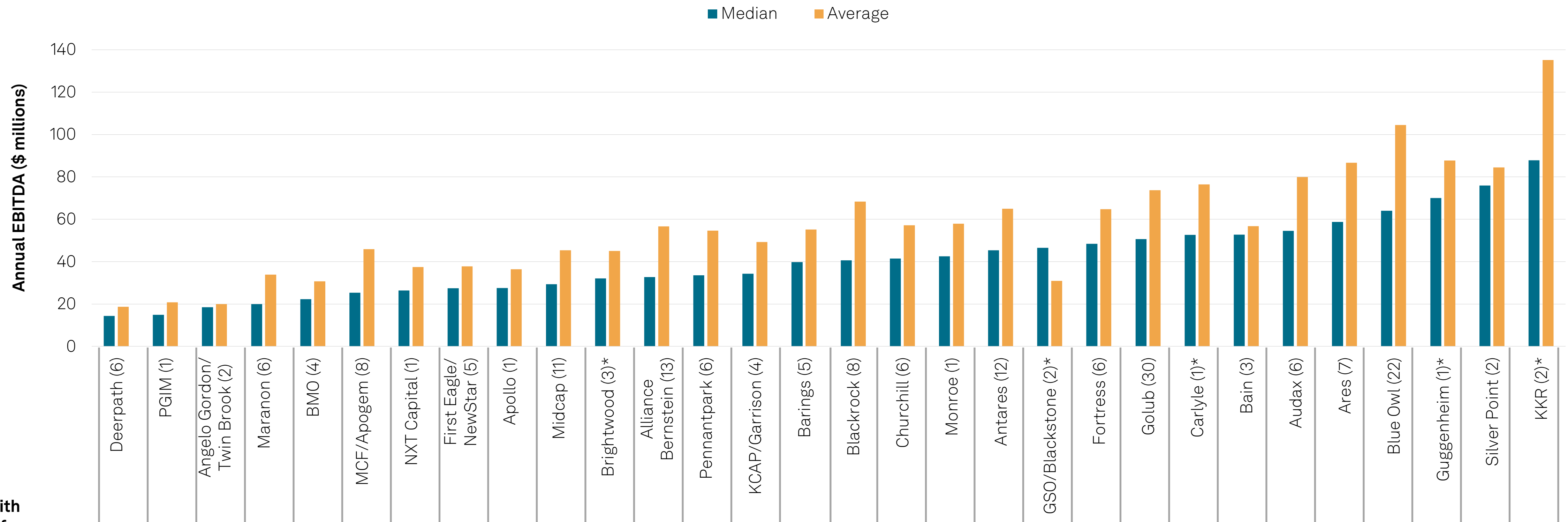
Managers | Fourth-Quarter 2023 Manager Metrics (2 of 2)

Manager (No. S&P MM CLOs)	Largest GICS Industry (%)	Largest GICS Industry	GICS industries (No.)	Largest issuer exposure (%)	Issuers (No.)	Issuers credit estimated (No.)	Downgrades in 2023 (No.) (i)	Upgrades in 2023 (No.) (i)	Credit estimated issuers (%)	Proportion credit estimated in Q4 2023 (%)	SPWARF (ii)	WAS (%)	WAM (years)	% of MM CLO assets unique to manager	Manager with largest overlap	Proportion overlap (%)
First Eagle/ NewStar (5)	15.10	Healthcare providers and services	48	2.34	194	69	14	6	58.04	1.26	3901	5.60	3.31	41	Blackrock	6.34
Fortress (6)	12.94	Hotels, restaurants and leisure	41	4.29	138	68	18	3	59.29	4.47	4060	6.36	3.25	62	Blue Owl	7.57
Golub (30)	24.17	Software	45	1.61	278	203	31	7	89.01	31.28	3965	5.70	3.44	46	Antares	9.38
GSO/ Blackstone (2)*	27.38	Hotels, restaurants and leisure	13	14.63	19	9	5	1	62.17	0.08	3771	4.95	1.87	30	Apollo	3.22
Guggenheim (1)*	12.49	Software	40	2.76	125	29	7	5	43.94	0.24	3924	5.25	3.66	29	Ares	8.35
KCAP/Garrison (4)	14.27	Software	38	2.79	120	49	18	12	47.06	0.80	4150	5.83	3.24	25	Ares	9.61
KKR (2)*	13.51	Healthcare providers and services	25	3.76	63	46	5	5	80.99	1.28	3981	6.11	3.70	43	Golub	6.32
Maranon (6)	9.43	Professional services	35	1.99	126	112	13	4	93.46	2.83	3833	5.66	2.97	56	MCF/ Apogem	6.24
MCF/Apogem (8)	12.08	Healthcare providers and services	40	1.66	203	177	19	8	89.99	1.52	3863	5.30	3.12	38	Ares	8.99
Midcap (11)	9.80	Commercial services and supplies	47	1.28	239	179	25	13	83.14	3.99	4053	5.89	3.42	43	Apollo	13.09
Monroe (1)	15.45	Software	35	1.25	132	41	10	4	32.29	0.16	3827	4.94	3.89	29	Audax	15.07
NXT Capital (1)	17.33	Healthcare providers and services	26	2.08	78	68	14	2	88.56	0.44	4167	5.42	3.12	34	Barings	6.62
Pennant Park (6)	10.68	Professional services	34	1.87	136	82	10	5	72.38	1.38	3979	5.89	3.14	44	KCAP/ Garrison	8.46
PGIM (1)	11.51	Commercial services and supplies	19	4.14	32	30	NA	NA	96.46	0.63	3865	6.59	3.53	84	Blackrock	1.24
Silver Point (2)	10.43	Software	32	2.83	51	20	5	1	44.74	0.41	4395	6.96	3.80	56	Fortress	3.60

(i) Based on quarterly exposure to companies with credit estimates raised and lowered during the quarter, summed across all four quarters in 2023. (i)Assets without credit estimate (or other derived S&P Global Ratings' credit rating) treated as 'ccc-' for purposes of SPWARF calculation. Includes both rated and credit estimated obligors. * All portfolios across rated transactions are amortizing. MM--Middle-market. CLO--Collateralized loan obligation. SPWARF--S&P Global Ratings weighted average rating factor. WAS--Weighted average spread. WAM--Weighted average maturity. CE--Credit estimate. Source: S&P Global Ratings.

Managers | Company Size Varies By Middle-Market CLO Manager

EBITDA of credit-estimated issuers held by MM CLO managers



Issuers with EBITDA of:	Deerpath (6)	PGIM (1)	Angelo Gordon/ Twin Brook (2)	Maranon (6)	BMO (4)	MCF/Apogem (8)	NXT Capital (1)	First Eagle/ NewStar (5)	Apollo (1)	Midcap (11)	Brightwood (3)*	Alliance Bernstein (13)	Pennantpark (6)	KCAP/Garrison (4)	Barings (5)	Blackrock (8)	Churchill (6)	Monroe (1)	Antares (12)	GSO/Blackstone (2)*	Fortress (6)	Golub (30)	Carlyle (1)*	Bain (3)	Audax (6)	Ares (7)	Blue Owl (22)	Guggenheim (1)*	Silver Point (2)	KKR (2)*
Less than 10 mil. (%)	24.4	14.5	12.2	9.6	10.3	6.8	6.7	10.4	5.9	5.4	6.1	7.6	5.0	1.9	4.8	14.7	2.0	3.1	5.2	11.5	5.9	2.0	7.7	3.2	4.2	0.4	5.1	2.5	0.0	5.3
Less than 25 mil. (%)	50.9	47.8	46.1	44.6	44.5	37.2	45.2	31.0	34.8	26.5	28.5	22.0	23.2	28.3	24.7	23.2	19.8	30.8	16.8	11.5	18.6	9.3	15.1	18.4	15.6	11.1	5.6	4.2	5.7	6.5

*All portfolios across rated transactions are amortizing. MM--Middle market. CLO--Collateralized loan obligation. CE--Credit estimate. Source: S&P Global Ratings.

S&P Global
Ratings

Managers | The Matrix: Fourth-Quarter 2023 Asset Overlap By Manager (%)

	Alliance Bernstein	Angelo Gordon/ Twin Brook	Antares	Apollo	Ares	Audax	Bain	Barings	Blackrock	Blue Owl	BMO	Brightwood	Carlyle	Churchill	Deerpath	First Eagle/NewStar	Fortress	Golub	GSO/ Blackstone	Guggenheim	KCAP/Garrison	KKR	Maranon	MCF/Apogem	Midcap	Monroe	NXT Capital	Pennantpark	PGIM	Silver Point
Alliance Bernstein		0.0	3.2	0.0	5.8	1.2	2.2	1.1	6.3	6.2	1.3	1.1	3.0	2.3	2.5	0.0	3.8	6.1	0.3	2.0	4.0	2.4	1.1	3.4	3.7	1.3	2.4	1.5	0.0	1.9
Angelo Gordon/Twin Brook	0.0		0.3	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.6	0.0	0.0	0.8	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	0.8	0.0	0.2	0.3	0.0	0.0
Antares	3.2	0.3		0.3	10.4	5.2	11.2	8.9	8.4	9.3	6.3	0.8	3.1	12.9	1.0	4.3	1.1	9.4	0.2	2.1	3.3	3.4	4.4	7.4	3.9	2.4	4.4	4.0	0.0	0.6
Apollo	0.0	0.0	0.3		0.0	0.0	0.0	1.2	0.0	0.0	0.6	1.8	0.0	0.5	0.0	2.3	0.0	0.0	3.2	0.0	1.3	0.0	0.0	1.0	13.1	0.5	0.0	2.7	0.0	0.0
Ares	5.8	0.2	10.4	0.0		12.6	2.6	5.2	9.8	5.5	1.6	0.5	2.8	7.3	0.7	3.4	2.7	8.1	0.7	8.3	9.6	4.6	2.3	9.0	4.9	9.9	0.8	3.3	0.0	0.0
Audax	1.2	0.0	5.2	0.0	12.6		1.9	1.7	4.3	6.2	0.7	0.5	2.6	9.6	2.6	5.7	2.4	2.8	0.5	6.3	9.0	0.6	2.6	4.5	0.8	15.1	0.4	5.8	0.0	0.0
Bain	2.2	0.0	11.2	0.0	2.6	1.9		3.1	2.4	2.0	0.0	0.0	0.9	1.8	0.0	5.5	1.4	2.3	0.0	0.0	1.7	0.0	0.0	1.5	1.7	0.6	1.8	1.6	0.0	0.0
Barings	1.1	0.1	8.9	1.2	5.2	1.7	3.1		2.6	1.3	4.8	1.2	2.1	9.7	0.3	4.8	0.8	1.8	0.7	2.2	3.5	2.6	2.5	2.8	3.9	4.6	6.6	3.3	0.0	1.3
Blackrock	6.3	0.0	8.4	0.0	9.8	4.3	2.4	2.6		8.1	0.0	3.4	0.7	6.2	0.6	6.3	5.5	8.1	0.0	7.3	4.3	5.2	3.7	4.1	3.5	5.5	2.5	5.9	1.2	3.2
Blue Owl	6.2	0.0	9.3	0.0	5.5	6.2	2.0	1.3	8.1		0.8	0.2	4.4	3.1	1.0	1.1	7.6	9.0	0.0	4.3	0.9	4.8	1.5	3.3	0.8	1.9	1.2	2.4	0.0	0.4
BMO	1.3	0.6	6.3	0.6	1.6	0.7	0.0	4.8	0.0	0.8		1.1	0.8	2.2	3.7	1.8	0.0	0.5	0.0	1.7	5.7	0.0	4.2	3.5	3.1	1.3	3.9	0.8	0.5	1.3
Brightwood	1.1	0.0	0.8	1.8	0.5	0.5	0.0	1.2	3.4	0.2	1.1		0.6	1.1	0.5	0.7	1.7	1.1	0.0	0.0	4.9	0.9	0.4	0.5	1.0	0.5	0.0	1.9	0.0	1.7
Carlyle	3.0	0.0	3.1	0.0	2.8	2.6	0.9	2.1	0.7	4.4	0.8	0.6		3.1	0.0	4.5	0.8	3.0	1.5	3.5	1.6	4.5	0.0	2.2	2.0	1.8	0.0	1.2	0.6	3.0
Churchill	2.3	0.8	12.9	0.5	7.3	9.6	1.8	9.7	6.2	3.1	2.2	1.1	3.1		1.4	4.4	0.5	4.9	0.4	2.2	3.3	1.8	4.2	7.5	5.1	8.7	2.2	3.0	0.0	0.0
Deerpath	2.5	0.3	1.0	0.0	0.7	2.6	0.0	0.3	0.6	1.0	3.7	0.5	0.0	1.4		1.4	0.6	0.1	0.2	0.0	2.8	0.0	0.0	1.0	0.0	1.0	1.0	2.7	0.8	0.0
First Eagle/NewStar	0.0	0.6	4.3	2.3	3.4	5.7	5.5	4.8	6.3	1.1	1.8	0.7	4.5	4.4	1.4		2.2	1.0	1.9	5.3	4.4	0.0	2.7	4.0	2.9	5.7	2.6	5.2	0.0	0.0
Fortress	3.8	0.0	1.1	0.0	2.7	2.4	1.4	0.8	5.5	7.6	0.0	1.7	0.8	0.5	0.6	2.2		1.3	0.0	3.1	3.2	1.1	0.0	0.0	1.6	0.7	1.3	1.5	0.0	3.6
Golub	6.1	0.0	9.4	0.0	8.1	2.8	2.3	1.8	8.1	9.0	0.5	1.1	3.0	4.9	0.1	1.0	1.3		0.0	1.5	4.3	6.3	1.0	3.2	1.5	1.0	1.9	0.9	0.3	0.1
GSO/Blackstone	0.3	0.0	0.2	3.2	0.7	0.5	0.0	0.7	0.0	0.0	0.0	0.0	1.5	0.4	0.2	1.9	0.0	0.0		0.4	1.0	0.0	0.6	0.3	0.8	0.8	0.0	1.4	0.0	0.0
Guggenheim	2.0	0.0	2.1	0.0	8.3	6.3	0.0	2.2	7.3	4.3	1.7	0.0	3.5	2.2	0.0	5.3	3.1	1.5	0.4		4.3	1.4	1.2	0.1	1.9	8.2	0.0	2.2	0.0	1.5
KCAP/Garrison	4.0	0.0	3.3	1.3	9.6	9.0	1.7	3.5	4.3	0.9	5.7	4.9	1.6	3.3	2.8	4.4	3.2	4.3	1.0	4.3		0.0	1.7	0.3	2.0	3.9	2.7	8.5	0.0	1.1
KKR	2.4	0.0	3.4	0.0	4.6	0.6	0.0	2.6	5.2	4.8	0.0	0.9	4.5	1.8	0.0	0.0	1.1	6.3	0.0	1.4	0.0		1.2	0.9	2.3	2.2	1.2	0.0	0.0	0.0
Maranon	1.1	1.5	4.4	0.0	2.3	2.6	0.0	2.5	3.7	1.5	4.2	0.4	0.0	4.2	0.0	2.7	0.0	1.0	0.6	1.2	1.7	1.2		6.2	1.7	1.2	3.2	2.3	0.0	1.4
MCF/Apogem	3.4	0.2	7.4	1.0	9.0	4.5	1.5	2.8	4.1	3.3	3.5	0.5	2.2	7.5	1.0	4.0	0.0	3.2	0.3	0.1	0.3	0.9	6.2		7.1	1.9	4.9	2.7	0.0	0.5
Midcap	3.7	0.8	3.9	13.1	4.9	0.8	1.7	3.9	3.5	0.8	3.1	1.0	2.0	5.1	0.0	2.9	1.6	1.5	0.8	1.9	2.0	2.3	1.7	7.1		2.7	2.8	4.2	0.4	0.3
Monroe	1.3	0.0	2.4	0.5	9.9	15.1	0.6	4.6	5.5	1.9	1.3	0.5	1.8	8.7	1.0	5.7	0.7	1.0	0.8	8.2	3.9	2.2	1.2	1.9	2.7		1.8	3.1	0.0	0.0
NXT Capital	2.4	0.2	4.4	0.0	0.8	0.4	1.8	6.6	2.5	1.2	3.9	0.0	0.0	2.2	1.0	2.6	1.3	1.9	0.0	0.0	2.7	1.2	3.2	4.9	2.8	1.8		3.0	0.0	0.0
Pennantpark	1.5	0.3	4.0	2.7	3.3	5.8	1.6	3.3	5.9	2.4	0.8	1.9	1.2	3.0	2.7	5.2	1.5	0.9	1.4	2.2	8.5	0.0	2.3	2.7	4.2	3.1	3.0		0.0	2.4
PGIM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.5	0.0	0.6	0.0	0.8	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0		0.0
Silver Point	1.9	0.0	0.6	0.0	0.0	0.0	0.0	1.3	3.2	0.4	1.3	1.7	3.0	0.0	0.0	0.0	3.6	0.1	0.0	1.5	1.1	0.0	1.4	0.5	0.3	0.0	0.0	2.4	0.0	

Source: S&P Global Ratings.

Managers | CLO Asset Credit Distribution By Manager

Credit Distribution Across Rated MM CLO Exposures (%)

Manager (S&P MM CLOs)	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	Non-perform	No rating/CE
Alliance Bernstein (13)	0.00	0.00	0.00	0.00	0.00	3.21	72.46	13.37	2.52	0.77	0.00	7.66
Angelo Gordon/Twin Brook (2)	0.00	0.00	0.00	0.00	0.00	2.22	84.50	1.68	2.25	1.81	0.00	7.54
Antares (12)	0.00	0.00	0.00	0.00	0.09	7.44	70.02	11.40	4.71	2.77	0.43	3.14
Apollo (1)	0.00	0.00	0.00	0.00	0.00	7.51	74.10	5.21	2.15	0.00	0.00	11.03
Ares (7)	0.00	0.00	0.26	0.00	0.00	7.77	69.50	8.87	6.40	2.51	0.92	3.77
Audax (6)	0.00	0.00	0.00	0.21	1.28	19.01	60.77	10.38	3.78	0.75	0.42	3.39
Bain (3)	0.00	0.00	0.00	0.00	0.00	5.17	68.93	5.57	2.47	1.35	0.00	16.51
Barings (5)	0.00	0.01	0.00	0.00	0.10	13.73	60.14	8.88	4.70	4.17	0.78	7.49
Blackrock (8)	0.00	0.00	0.00	0.00	0.00	15.33	56.49	11.76	7.91	5.15	0.12	3.24
Blue Owl (22)	0.00	0.00	0.00	0.00	0.38	10.96	64.79	13.94	3.70	0.14	0.00	6.09
BMO (4)	0.00	0.00	0.00	0.00	0.00	6.69	60.55	7.02	5.39	4.80	2.45	13.12
Brightwood (3)*	0.00	0.00	0.00	0.00	3.50	13.53	59.99	9.76	2.99	6.66	0.23	3.34
Carlyle (1)*	0.00	0.00	0.00	0.00	2.29	7.30	63.94	7.65	6.15	5.33	1.42	5.93
Churchill (6)	0.00	0.00	0.00	0.00	0.52	6.61	71.69	7.09	2.88	2.82	1.39	7.00
Deerpath (6)	0.00	0.00	0.00	0.00	0.32	6.26	76.94	2.06	1.41	2.72	0.00	10.29
First Eagle/NewStar (5)	0.01	0.00	0.00	0.23	3.14	11.35	61.94	6.51	3.87	4.26	0.54	8.16
Fortress (6)	0.00	0.00	0.09	5.90	0.21	10.00	52.46	7.53	2.93	3.54	1.80	15.54
Golub (30)	0.00	0.00	0.00	0.00	0.00	4.52	71.92	11.44	2.15	1.41	0.50	8.07
GSO/Blackstone (2)*	0.00	3.24	0.00	0.00	0.00	5.76	76.28	0.00	4.14	3.60	0.00	6.98
Guggenheim (1)*	0.00	0.00	0.09	0.21	2.61	12.26	56.18	13.74	6.42	0.28	0.55	7.66
KCAP/Garrison (4)	0.00	0.37	0.00	0.00	0.78	9.94	58.07	10.32	6.91	5.03	2.91	5.67
KKR (2)*	0.00	0.00	0.00	0.00	0.11	8.91	68.28	3.48	1.76	3.46	0.00	14.01
Maranon (6)	0.00	0.00	0.00	0.00	0.00	3.75	81.73	5.23	3.67	2.81	0.34	2.47
MCF/Apogem (8)	0.00	0.00	0.00	0.00	0.16	9.77	73.30	3.14	3.23	2.26	0.48	7.65
Midcap (11)	0.00	0.00	0.00	0.00	0.00	8.74	65.00	6.25	2.98	2.48	0.68	13.87
Monroe (1)	0.00	0.00	0.00	0.00	1.80	18.81	57.79	10.33	0.68	2.06	1.00	7.55
NXT Capital (1)	0.00	0.00	0.00	0.00	0.00	3.68	66.88	8.63	2.93	8.26	1.51	8.11
Pennantpark (6)	0.00	0.00	0.00	0.00	0.56	9.64	67.61	5.07	2.51	3.63	1.01	9.99
PGIM (1)	0.00	0.00	0.00	0.00	0.00	12.74	69.02	3.58	0.00	11.12	0.00	3.54
Silver Point (2)	0.00	0.00	0.00	0.00	3.25	21.61	26.05	13.97	3.41	0.00	2.83	28.88

Based on data available to us as of Jan. 1, 2024. *All portfolios across rated transactions are amortizing. MM--Middle market. CLO--Collateralized loan obligation. CE--Credit estimate.
Source: S&P Global Ratings.

- The large majority of MM CLO assets are credit estimated at ‘b-’, though there is some variation across managers
- Some exposures do not have a rating or credit estimate, some of which are due to expired credit estimates (several may be in the process of updating their credit estimates)
- Un-rated exposures should be treated as ‘CCC-’ as per CLO documentation.

PE Sponsors | Sponsor Diversity In MM CLO Collateral Pools

Manager (No. S&P MM CLOs)	Credit estimated issuers (%)	Credit estimated issuer (No.)	Proportion of credit estimated exposures matched to sponsor (%)	Unique sponsors across CE issuers (No.)	Max exposure across 1 sponsor (%)	Max CE issuers from one sponsor (No.)	Earliest trustee report within data set per manager	Latest trustee report within data set per manager
Alliance Bernstein (13)	89.70	117	**62.11**	57	3.01	4	11/8/2023	12/13/2023
Angelo Gordon/Twin Brook (2)	92.46	86	**62.99**	34	4.40	6	11/6/2023	11/6/2023
Antares (12)	90.81	279	**82.97**	104	3.70	13	10/6/2023	12/7/2023
Apollo (1)	88.97	24	**62.50**	15	5.32	2	10/31/2023	10/31/2023
Ares (7)	59.38	142	**73.83**	61	3.16	5	11/1/2023	12/1/2023
Audax (6)	22.49	74	**78.49**	42	1.07	3	11/6/2023	11/6/2023
Bain (3)	80.02	53	**56.16**	25	5.75	3	11/7/2023	11/8/2023
Barings (5)	82.38	113	**84.89**	46	4.02	5	11/3/2023	12/5/2023
Blackrock (8)	74.52	131	**77.44**	46	9.13	11	11/3/2023	11/8/2023
Blue Owl (22)	80.01	134	**72.30**	51	5.12	9	10/5/2023	12/1/2023
BMO (4)	85.63	122	**85.15**	69	3.65	6	11/30/2023	11/30/2023
Brightwood (3)*	85.01	41	**83.50**	22	10.59	3	11/8/2023	12/8/2023
Carlyle (1)*	83.63	48	**81.95**	29	8.92	4	11/21/2023	11/21/2023
Churchill (6)	79.61	192	**80.31**	71	4.15	7	11/7/2023	12/7/2023
Deerpath (6)	84.27	102	**64.40**	40	5.19	6	11/13/2023	11/13/2023
First Eagle/NewStar (5)	58.04	69	**68.33**	31	4.07	4	11/10/2023	12/3/2023
Fortress (6)	59.29	68	**44.30**	26	4.55	3	10/31/2023	11/30/2023
Golub (30)	89.01	203	**74.99**	69	5.74	9	11/6/2023	12/6/2023
GSO/Blackstone (2)*	62.17	9	**61.04**	3	19.78	2	11/6/2023	11/6/2023
Guggenheim (1)*	43.94	29	**87.91**	19	4.30	2	11/8/2023	11/8/2023
KCAP/Garrison (4)	47.06	49	**75.11**	30	3.97	3	11/2/2023	11/8/2023
KKR (2)*	80.99	46	**70.02**	24	6.97	3	11/30/2023	11/30/2023
Maranon (6)	93.46	112	**60.24**	46	5.29	4	11/3/2023	12/5/2023
MCF/Apogem (8)	89.99	177	**79.45**	83	3.54	7	11/8/2023	11/10/2023
Midcap (11)	83.14	179	**71.97**	72	4.09	7	11/6/2023	12/4/2023
Monroe (1)	32.29	41	**71.25**	25	2.07	2	11/8/2023	11/8/2023
NXT Capital (1)	88.56	68	**89.91**	43	5.72	4	11/8/2023	11/8/2023
Pennantpark (6)	72.38	82	**69.12**	33	5.15	5	11/8/2023	12/1/2023
PGIM (1)	96.46	30	**25.38**	5	9.15	3	10/31/2023	10/31/2023
Silver Point (2)	44.74	20	**74.78**	15	2.83	1	11/1/2023	11/1/2023

- Over 300 sponsors are affiliated with the 2,000+ issuers that have been credit estimated in 2022 and 2023. Some sponsors are affiliated with several issuers that have been recently credit estimated, while some sponsors are affiliated with much fewer issuers.
- Some sponsors fund their investments across several MM CLO managers, while some sponsors only work with a small handful of managers.
- Across the sponsors of issuers held across 10 or more MM CLO managers, we find the CLO exposures to these issuers tend to have:
  - Loans with slightly lower spreads;
  - Higher credit estimates;
  - A further pushed out maturity wall; and
  - More tech-related companies.

*All portfolios across rated transactions are amortizing. Source: S&P Global Ratings.

MM CLO Ratings | Few Downgrades In 2020 (And None Since)

U.S. BSL CLO and middle-market CLO rating changes (2020-Q4 2023)

CLO type	Total ratings (mid-2020)	Rating action	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Total
BSL CLOs	3,786	Downgrades		19	464	10	4	7	2	4	3	1	3	3	7	5	24	12	568
		Upgrades			5	5	4	18	23	203	4	70	2	3	2	1	79	3	422
MM CLOs	553	Downgrades			7														7
		Upgrades							2	13	2	6	2	2	3	2	2		34

BSL--Broadly syndicated loan. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

MM CLO transactions performed well during the pandemic, with only seven ratings lowered during 2020--about 1.3% of the outstanding ratings at the time, versus 13.0% of BSL CLO ratings lowered during the year. Why?

1) **CLO structural reasons:** MM CLOs tend to have more par subordination and rating cushion at a given tranche level than a typical BSL CLO, with this being positively correlated with the proportion of credit estimates in a CLO collateral pool. MM CLOs also sometimes don't issue lower-rated ('BBB' and 'BB') tranches, which would be more likely to see downgrades than more senior tranches.

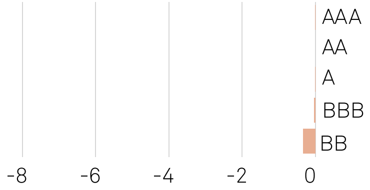
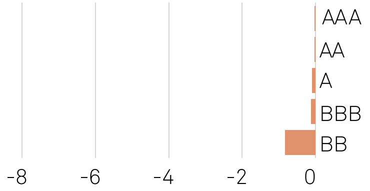
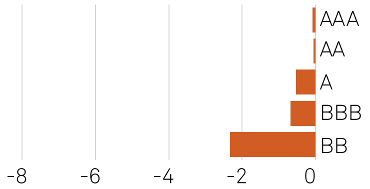
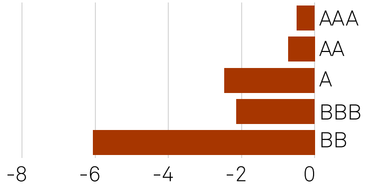
2) **Fewer loan payment defaults:** In 2020, parties to middle-market loan agreements were able to amend loan terms in ways that avoided payment defaults and bankruptcy. This took different forms: rolling scheduled amortization into the final bullet, allowing a company to PIK upcoming interest payments, pushing out loan maturities, etc. S&P Global Ratings treated some of these as selective defaults, but they reduced the level of conventional (payment) defaults (see slide 16).

3) **Some sponsors injected cash into their companies:** This was done because, in some cases, sponsors saw value in infusing equity rather than losing control of the company in a payment default/bankruptcy scenario. In a more protracted downturn, however, the economic incentives to do this might be less appealing.

4) **CLO manager asset swaps:** Under their CLO indenture provisions, MM CLO managers can swap out distressed assets from the portfolio and replace them with loans from better-performing companies. Because MM CLO managers often (although not always) hold the CLO equity in their transactions, and because they often manage assets across different types of accounts, in some cases they may be incentivized to move distressed assets outside of their CLO(s) and replace them. It's also often easier for a manager to work out a distressed loan outside the CLO.

5) **Par build from new loans:** New issue loans are typically placed into MM CLOs at a small discount--for example, 97.5% or 98% of par. Since these loans are carried at par, they increase the overall par value of the collateral pool and benefit the CLO. During periods of stress, collateral turnover will likely slow and the effect will be muted. During periods of higher collateral turnover, such as in 2021, the effect can be more pronounced.

MM CLO Ratings | Scenario Analysis: How Resilient Are MM CLO Ratings?

	Scenario	Impact across CLO sample	Model-determined impact: average notches off current rating
10% default scenario	10% of performing assets within each MM portfolio defaults with 50% recovery	5% par loss within all MM portfolios	
15% default scenario	15% of performing assets within each MM portfolio defaults with 50% recovery	7.5% par loss within all MM portfolios	
20% default scenario	20% of performing assets within each MM portfolio defaults with 50% recovery	10% par loss within all MM portfolios	
30% default scenario	30% of performing assets within each MM portfolio defaults with 50% recovery	15% par loss within all MM portfolios	

- We applied a series of hypothetical stress scenarios to of our rated middle-market CLO transactions, generating quantitative analysis for each one using our CLO rating models (CDO Evaluator and S&P Cash Flow Evaluator) (see "Scenario Analysis: How Resilient Are Middle-Market CLO Ratings (2023 Update)?"published Oct. 16, 2023.)
- The scenarios feature increasing levels of collateral default stress.
- The stress scenarios shows the fundamentals of the CLO structure protecting the noteholders, especially for the senior CLO tranches, and that middle-market CLOs can withstand comparable asset defaults with less rating impact than BSL CLOs.

MM--Middle market. WA--Weighted average. Source: S&P Global Ratings.

MM CLO Ratings | Scenario Analysis: How Resilient Are MM CLO Ratings?

Hypothetical stress scenario results

Scenario One: 10% default / 5% par loss

	CLO tranche rating movement under scenario (%)											
Current tranche rating	**0**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7+**	**Avg. notches**	**Spec.-grade**	**'CCC' category**	**Below 'CCC-'**
'AAA'	98.90	1.10							-0.01			
'AA'	100.00								0.00			
'A'	99.27	0.73							-0.01			
'BBB'	96.58	3.42							-0.03	3.42		
'BB'	86.57	7.46	1.49		1.49	1.49		1.49	-0.34	100.00	2.99	1.49

Scenario Two: 15% default / 7.5% par loss

	CLO tranche rating movement under scenario (%)											
Current tranche rating	**0**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7+**	**Avg. notches**	**Spec.-grade**	**'CCC' category**	**Below 'CCC-'**
'AAA'	98.17	1.83							-0.02			
'AA'	98.83		1.17						-0.02			
'A'	94.16	3.65	1.46	0.73					-0.09			
'BBB'	90.60	6.84	2.56						-0.12	5.13		
'BB'	65.67	20.90	4.48	1.49		1.49	1.49	4.48	-0.82	100.00	2.99	4.48

Scenario Three: 20% default / 10% par loss

	CLO tranche rating movement under scenario (%)											
Current tranche rating	**0**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7+**	**Avg. notches**	**Spec.-grade**	**'CCC' category**	**Below 'CCC-'**
'AAA'	93.04	6.96							-0.07			
'AA'	95.91	2.92	1.17						-0.05			
'A'	63.50	23.36	11.68	0.73	0.73				-0.52	0.73		
'BBB'	48.72	41.03	5.98	2.56	1.71				-0.68	48.72		
'BB'	25.37	28.36	8.96	11.94	2.99	7.46	4.48	10.45	-2.33	100.00	14.93	10.45

Scenario Four: 30% default / 15% par loss

	CLO tranche rating movement under scenario (%)											
Current tranche rating	**0**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7+**	**Avg. notches**	**Spec.-grade**	**'CCC' category**	**Below 'CCC-'**
'AAA'	53.11	45.79		1.10					-0.49			
'AA'	55.56	19.30	23.98			1.17			-0.73			
'A'	11.68	3.65	29.20	16.79	32.85	5.11	0.73		-2.74	10.95		
'BBB'	5.98	45.30	13.68	17.09	11.11	4.27		2.56	-2.14	94.02	0.85	1.71
'BB'	8.96	4.48	2.99			1.49		82.09	-6.06	100.00	1.49	82.09

WA--Weighted average. Source: S&P Global Ratings.

- Even under the most punitive of our scenarios, with 30% of the collateral in the CLOs defaulting with a 50% recovery, about three-quarters of the CLO ‘AAA’ ratings either remain ‘AAA’ or are downgraded one notch to ‘AA+’.
- No ‘AAA’ rating was lowered by more than five notches (below ‘A’) under any of the scenarios.
- As expected, ratings further down the MM CLO capital stack were affected more significantly in the hypothetical stress scenarios.
- For example, under our most stressful scenario (the above-referenced 30% default case), 94% of our ‘BBB’ ratings were lowered to ‘BB+’ or below, while 0.85% of the ratings were lowered into the ‘CCC’ range and 1.71% defaulted.

U.S. CLOs | Thirty Years And 59 Tranche Defaults

- S&P Global Ratings has rated **more than** 17,000 U.S. CLO tranches since our first CLOs in the mid-1990s. Our CLO ratings history **spans three recessionary periods**: the dot.com bust of 2000-2001, the global financial crisis in 2008-2009, and the recent COVID-19-driven downturn in 2020.
- Over that period, a total of 59 U.S. CLO tranches **have defaulted:** 40 U.S. CLO tranches from CLO 1.0 transactions originated in 2009 or before, and another 19 U.S. CLO 2.0 tranches.
- Across four other CLO 2.0s, there are two tranches rated 'CC (sf)' that are **likely to default** in the future for similar reasons and another two tranches rated 'CCC- (sf)' that may default.

U.S. BSL and middle-market CLO 1.0 and 2.0 default summary by original rating

	CLO 1.0 Transactions (2009 and prior)				**CLO 2.0 Transactions (2010 and later)**			
	Original rating(i)	**BSL CLO Defaults(ii)**	**MM CLO Defaults(ii)**	**Currently rated(ii)**	**Original rating(i)**	**BSL CLO Defaults(ii)**	**MM CLO Defaults(ii)**	**Currently rated(ii)**
AAA (sf)	1,540	0	0	0	3,639	0	0	1,626
AA (sf)	616	1	0	0	2,964	0	0	1,398
A (sf)	790	4	1	0	2,449	0	0	1,198
BBB (sf)	783	7	2	0	2,230	0	0	1,184
BB (sf)	565	19	3	0	1,818	8	0	975
B (sf)	28	3	0	0	389	11	0	187
Total	4,322	34	6	0	13,489	19	0	6,568

(i)Original rating counts as of June 30, 2023. (ii)CLO tranche default counts as of August 1st, 2023. Source: S&P Global Ratings.

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