Middle-Market CLO And Private Credit Quarterly:
Strong CLO Growth, But Weakening Underlying Credit

Q4 2023

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This report does not constitute a rating action

Middle-Market Lending Key Takeaways

Takeaways

- Reference rates for loans issued by credit-estimated companies have jumped by roughly 500 basis points (bps), and issuers are now facing sharply increased debt servicing costs. Many of these companies set up more ambitious capital structures in a different rate regime that may prove unsustainable and push them to a ‘ccc’ credit estimate score.
- For third-quarter 2023, U.S. credit estimates saw the highest number of downgrades since the pandemic: an aggregate of 91 entities saw credit estimates lowered, with over 75% of these going into the ‘ccc’ category. Year to date, there have been a total of 61 upgrades and 175 downgrades, bringing the aggregate credit estimate upgrade-to-downgrade ratio to 0.35.
- We’ve noticed a pickup in credit events (“specified amendments”) for credit-estimated companies. Most of the amendments are looking to push back upcoming maturities as sponsor ability to exit remains challenging given market volatility and diverse views on valuation. Another theme for amendments is issuers requesting a deferral of interest or the ability to pay-in-kind (PIK) upcoming interest payments. We have also received notifications to reschedule principal payments. Year to date, we have seen three instances where lenders took ownership/majority stake in the companies.
- Defaults have slowed down in the syndicated loan market, with the trailing 12-month Morningstar LSTA US Leveraged Loan Index default rate dropping to 1.67% in September from 1.86% back in August. Among rated loan issuers, we expect the trailing-12-month Morningstar LSTA US Leveraged Loan Index default rate to increase to 2.75% by June 2024 under our base case, a bit higher than the historical average rate of 2.50%. Under our pessimistic case, we think defaults could increase to 4.75% over the same period.
- We expect downgrades to dominate upgrades for the rest of the year and early next year. We also expect selective defaults to rise as more companies will look to seek amendments around maturity and liquidity.
- Recurring revenue loans represent a small proportion of our outstanding credit estimates (currently about 100 companies). The median EBITDA for these companies is about $4 million, and 70% have a credit estimate score in the ‘ccc’ range. The remaining are ‘b-’. See slide 13 for more information.

Key risks

- The higher-for-longer rate environment will be a drain on the funds from operations (FFO) for small growth companies that have high debt levels to begin with.
- Upcoming maturities will be a challenge as private equity exit timelines are pushed back given market volatility.

Middle-Market CLO Key Takeaways

Takeaways

- Middle-market collateralized loan obligations (CLOs) have seen strong new issuance this year, with year-to-date volume surpassing 2022 total issuance by end of July 2023. Through September, $18.38 billion of middle-market CLOs have been issued, versus $9.38 billion over the same period last year, an increase of 95%. Broadly-Syndicated Loan (BSL) CLO issuance over the same period is down 32.5% this year.
- There were 91 credit estimate downgrades in Q3 2023, a sharp increase from prior quarters (see slide 10). This is a relatively small proportion of our 2,500 outstanding credit estimates but did result in higher 'ccc' baskets and exposure to defaulted assets. Other metrics have mostly held steady so far (slide 17):
    - The average 'CCC' basket has crept up to 12.32% of total assets, up from 9.58% a year ago.
    - Defaulted assets in middle-market CLOs ticked up slightly but remain low at 0.47%, up from 0.15% a year ago.
    - The average S&P Global Rating's weighted average rating factor (SPWARF) was mostly unchanged at 3855, versus 3800 a year ago.
- Middle-market CLO junior overcollateralization (O/C) ratios have an average cushion of 6.9%, which has modestly declined over the past year but remains at a high level. The O/C test haircuts that are happening are mostly due to defaulted assets held (see slide 20). While middle-market CLO 'CCC' buckets have increased, most are still well below the typical 17.5% threshold, meaning the Q3 2023 spike in credit estimate downgrades will have little impact.
- Software and healthcare providers and services are the two largest sectors within both middle-market and BSL CLOs. The average middle-market CLO has 15.87% of its assets in software companies versus 11.58% for the average BSL CLO, and 9.38% of its assets in healthcare providers and services versus 6.63% for the average BSL CLO (see slide 19).
- The median EBITDA for credit-estimated companies varies significantly across middle-market CLO managers. We provide median EBITDA and other metrics at the CLO manager level on slide 22.
- On October 16th, we published our 2023 middle-market CLO rating scenario analysis (see slides 26 and 27). The results show that middle-market CLOs can withstand comparable defaults with less rating impact than BSL CLOs. The study also notes that middle-market CLOs have performed better than BSL CLOs during the amortization phase, with less deterioration in credit metrics.
- Despite the increase in credit estimate downgrades, our outlook for middle-market CLO ratings remains stable. While there could be scattered downgrades among lower rated middle-market CLO tranches, in our view most of these transactions have a large capacity (and rating cushions) to absorb credit deterioration among the underlying collateral.

Credit Estimates | Median Leverage And Interest Coverage By Sector

Household products has displaced software as the highest leverage sector

Metrics for companies with credit estimates updated through Q3 2023

Top 10 industries with the highest S&P Global Ratings-calculated leverage ratios after factoring in the higher benchmark rate

Industry	Median of debt/EBITDA (x)	Number of obligors
Household products	9.32	5
Software	8.04	171
Capital markets	7.94	7
Diversified consumer services	7.84	61
Personal products	7.73	15
Insurance	7.69	39
Construction materials	7.38	4
IT services	7.13	61
Healthcare providers and services	6.98	174
Wireless telecommunication services	6.97	9

Excludes sectors with fewer than four credit estimates outstanding. Source: S&P Global Ratings.

Top 10 industries with the lowest S&P Global Ratings-calculated interest coverage ratios after factoring in the higher benchmark rate

Industry	Median interest coverage (x)	Number of obligors
Household products	1.02	5
Software	1.04	171
Personal products	1.21	15
Diversified consumer services	1.27	61
Insurance	1.32	39
Textiles, apparel, and luxury goods	1.36	10
Health care technology	1.37	48
Healthcare providers and services	1.42	174
IT services	1.42	61
Aerospace and defense	1.43	24

Excludes sectors with fewer than four credit estimates outstanding. Source: S&P Global Ratings.

Credit Estimates | Top 10 Sectors By % Of Companies With <1.0x Interest Coverage (I/C) Ratios

Top 10 sectors by % of companies with I/C ratios less than 1.0x

Industry	% of companies with less than 1.0x	Median I/C ratio for whole sector
Software	47	1.04
Household durables	33	1.48
Personal products	33	1.21
Wireless telecommunication services	33	1.44
Building products	31	1.60
Beverages	29	2.94
Construction materials	25	1.94
Health care technology	25	1.37
Real estate management and development	25	1.97
Diversified consumer services	25	1.27

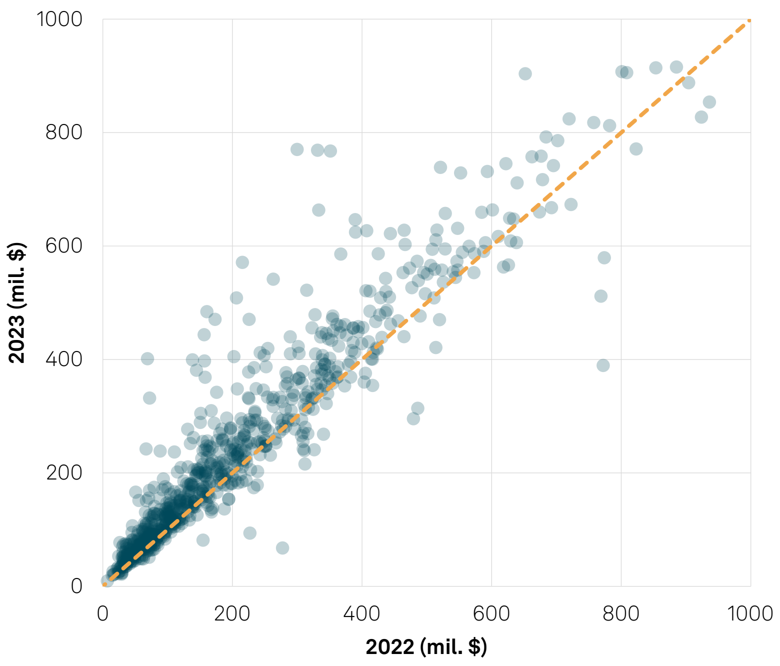
I/C--Interest coverage. Excludes sectors with fewer than four credit estimates outstanding. Source: S&P Global Ratings.

- Almost half of the companies in the software sector have an interest coverage ratio of less than 1.0x, given their highly leveraged capital structures.
- However, liquidity for software is a relatively healthy 2.85 times, which is close to the median liquidity of 2.94 for the entire universe of companies reviewed this year.
- Healthcare providers, the most represented sector in credit estimates, has approximately 20% of companies with an interest coverage ratio less than 1.0x.

Credit Estimates | Revenue And Leverage Trends

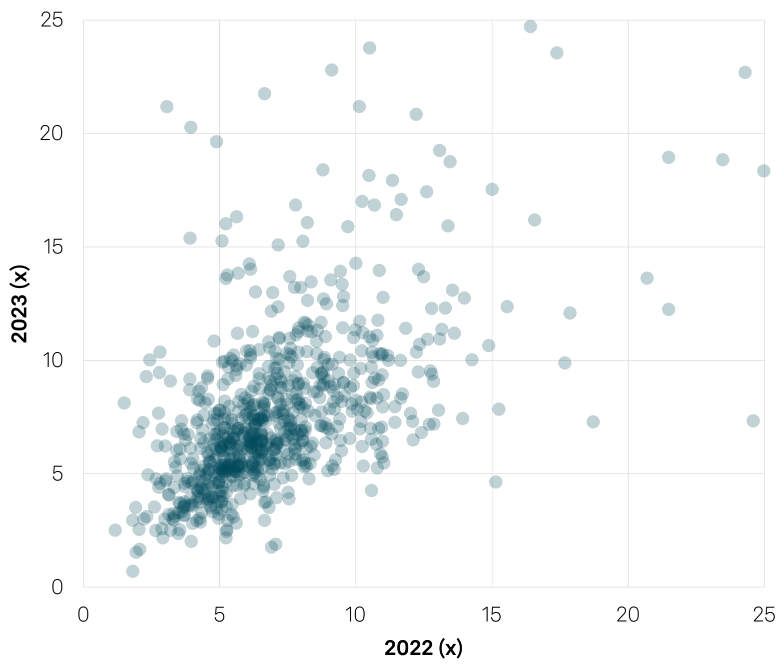
Change in metrics for credit-estimated obligors (2022 reviews vs. 2023 reviews)

Revenue: 2022 vs. 2023



Source: S&P Global Ratings.

Leverage: 2022 vs. 2023



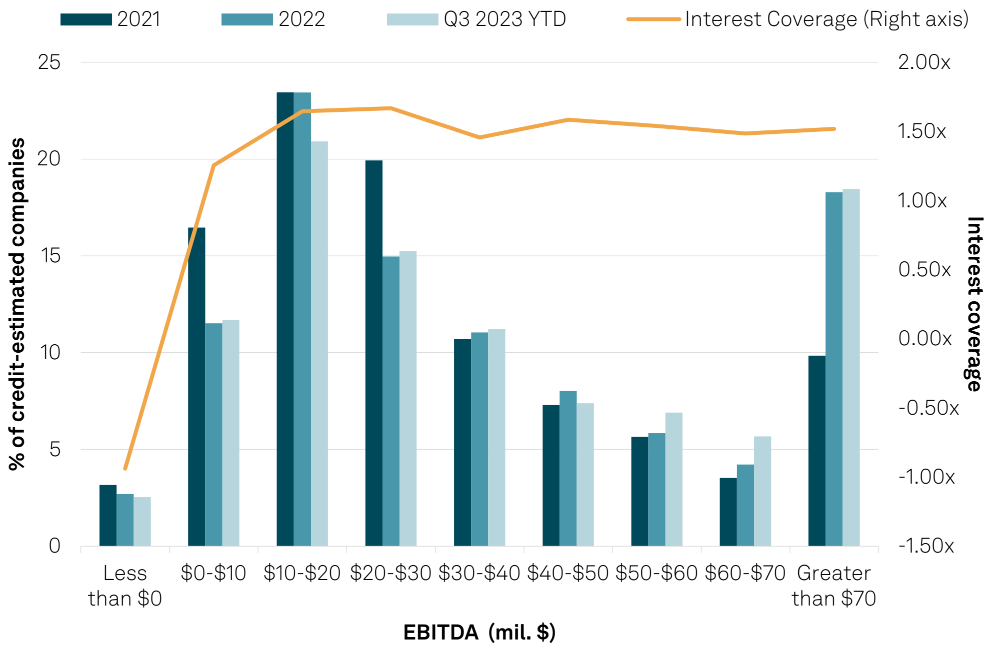
Source: S&P Global Ratings.

- Each point in the scattergrams represent a single credit-estimated company reviewed in 2022 and 2023.
- Points above the trendline indicate growth in revenue and leverage.
- 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 61% of cases, respectively. Still, leverage increased in 53% of cases.
- For reviews done, median revenue and EBITDA increased by 21% and 30%, respectively, while leverage went up by 28%.

Credit Estimates | EBITDA And Free Operating Cash Flow Distribution

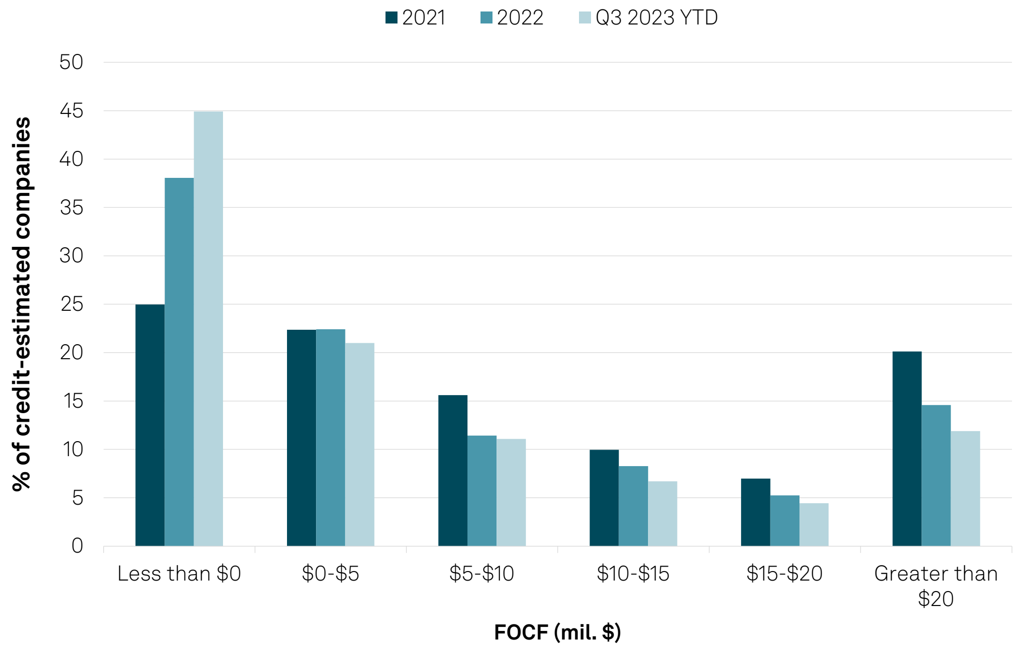
- Roughly 3% of companies reviewed in the first three quarters of 2023 generated negative EBITDA.
- About 45% of companies reviewed during the same period generated negative free operating cash flow (FOCF) (post-application of higher benchmark rates).
- The negative FOCF, in part, also reflects companies willing to invest in capital expenditure.
- Coverage ratio appears to be agnostic to the size of the company (using EBITDA as a proxy).

EBITDA



YTD--Year to date. Source: S&P Global Ratings.

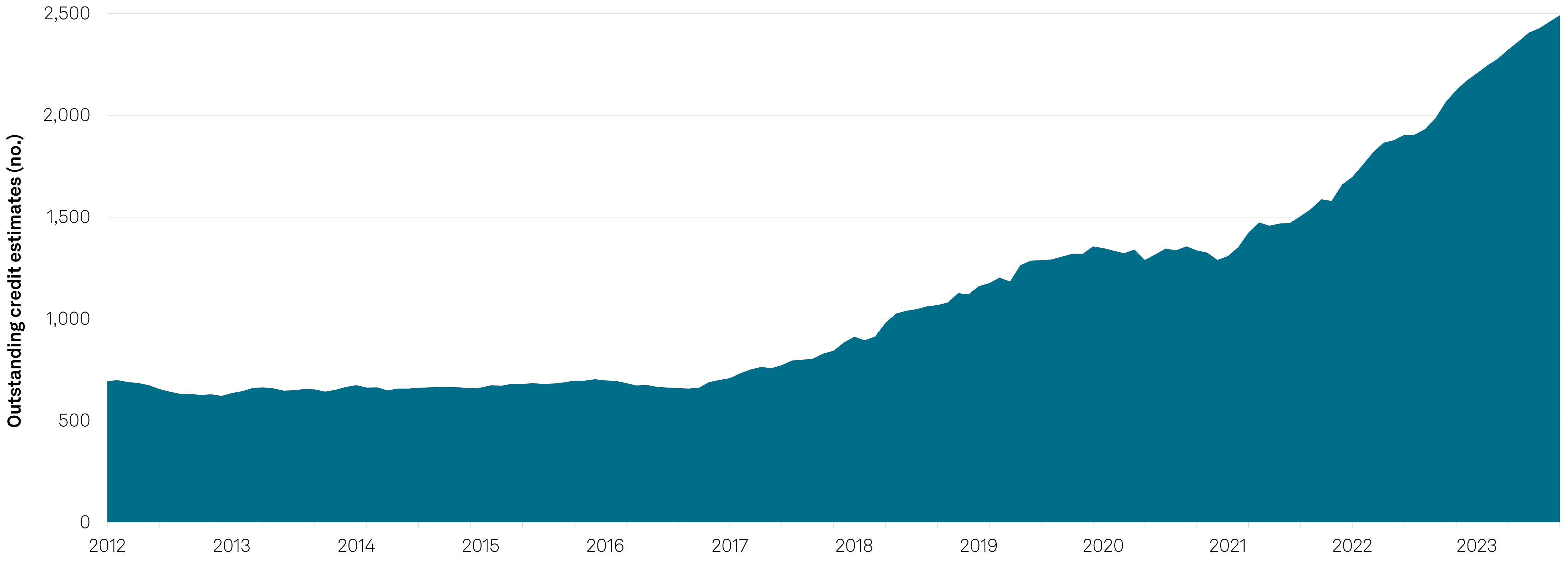
Free operating cash flow



YTD--Year to date. Source: S&P Global Ratings.

Credit Estimates | Growth In Outstanding Credit Estimates

All outstanding S&P Global Ratings credit estimates (2012–Q3 2023)*

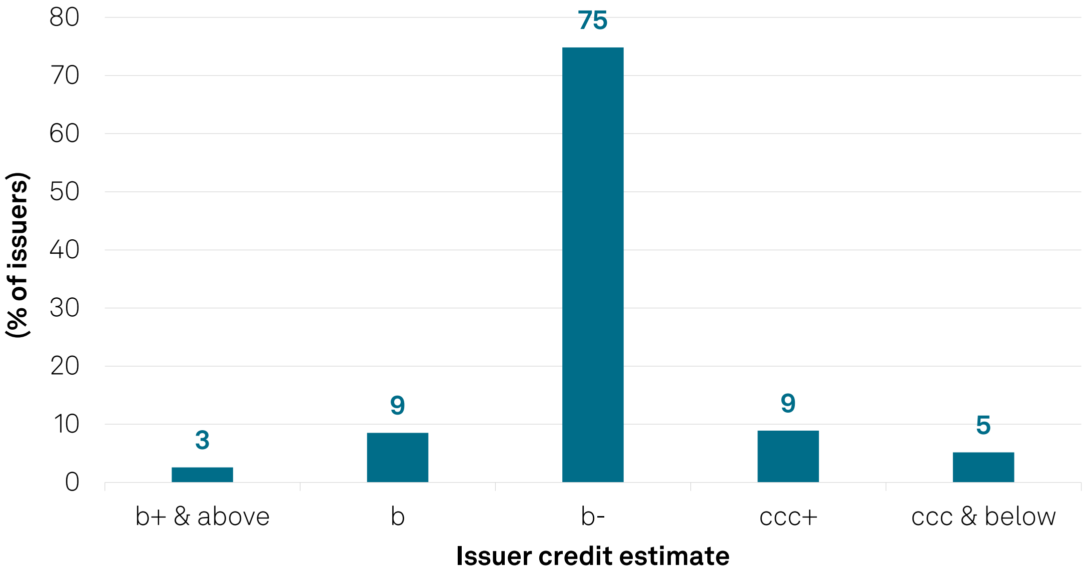


*Covers all outstanding S&P Global Ratings U.S. credit estimates, including a small number of estimates for obligors not currently held within a CLO transaction. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

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

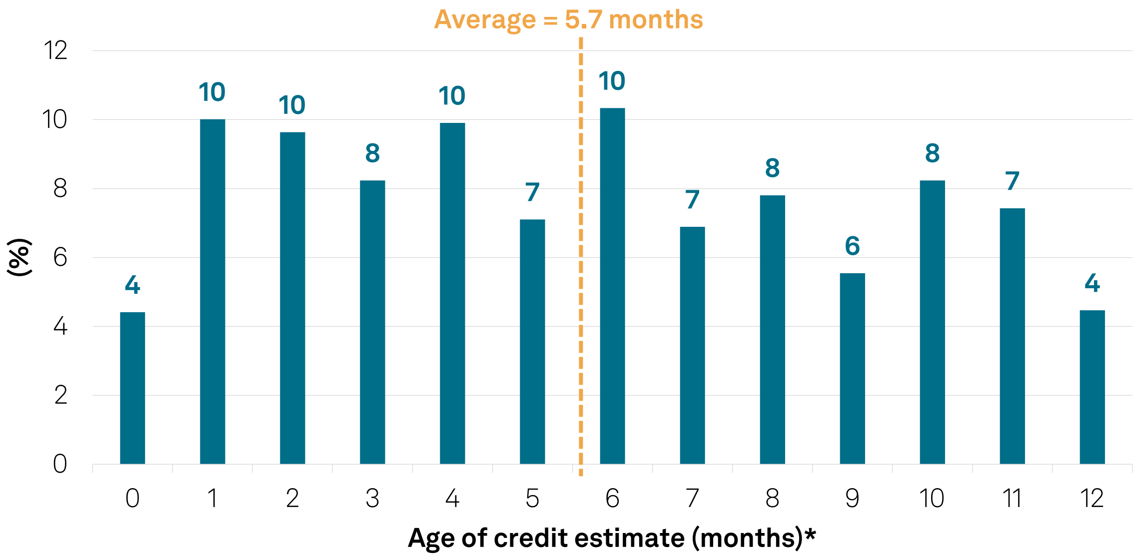
- Many of the companies we assign credit estimates to are financial sponsor-owned and generally highly levered.
- For credit-estimated companies reviewed in 2023, the median EBITDA was $30 million, and the median adjusted debt was about $195 million.
- Due to their weaker business and financial risk 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 third-quarter 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.

Credit estimates by number of months since last update*

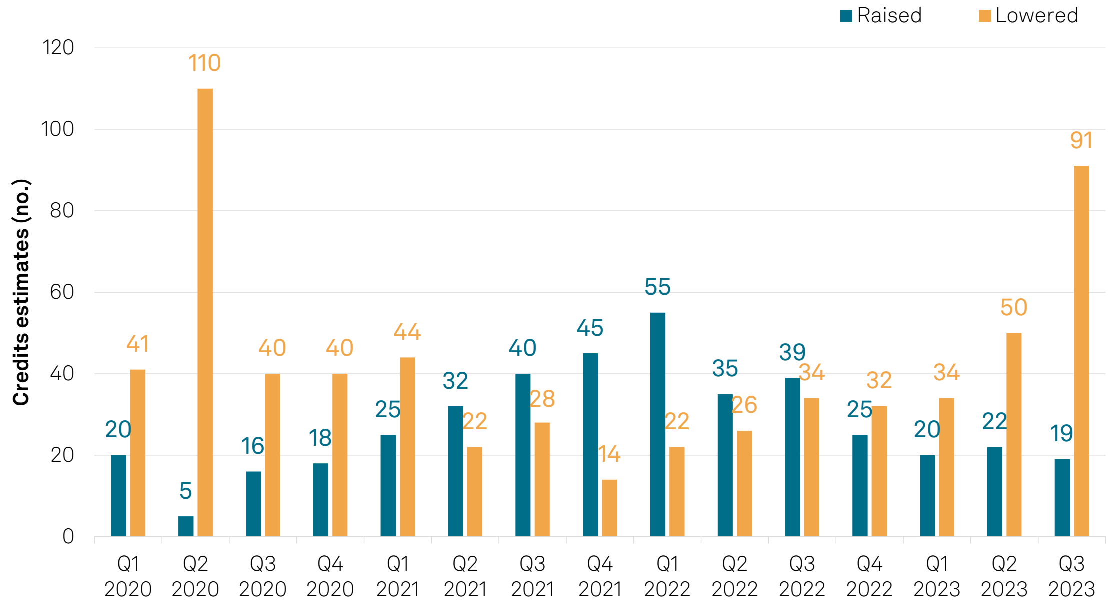


*Covers all outstanding S&P Global Ratings U.S. credit estimates, including estimates for obligors not currently held within a CLO transaction. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

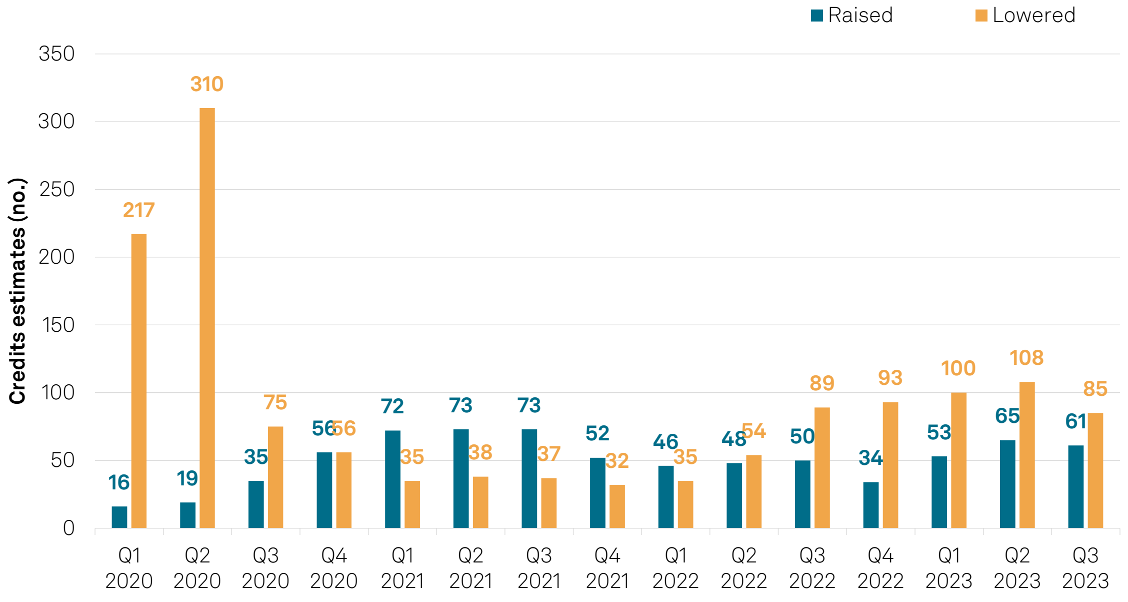
Credit Estimates | Credit Estimates Changes Vs. Rating Changes

- Downgrades peaked in the second quarter of 2020 due to the pandemic, as we lowered credit estimate scores to 'ccc'/'sd'/'d' on over 85 entities.
- From the second-quarter of 2021 through the third-quarter of 2022, upgrades outpaced downgrades. However, that trend changed in the third quarter of 2022.
- In third-quarter 2023, we saw the highest number of downgrades since second-quarter 2020. So far in 2023, downgrades have surpassed upgrades almost 3:1.

Credit estimates raised and lowered (Q1 2020-Q3 2023)



BSL Ratings raised and lowered (Q1 2020-Q3 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.

Credit Estimates | Raised And Lowered By Sector

61 upgrades through Q3 YTD 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	14.8	7.5	9
2 Hotels, restaurants, and leisure	8.2	2.8	5
3 Software	8.2	11.7	5
4 Media	4.9	3.4	3
5 Healthcare providers and services	4.9	11.9	3

175 downgrades through Q3 YTD 2023

Top five sectors downgraded	Overall percentage of downgrades (%)	Sector exposure of total credit estimates (%)	Count of obligor (no.)
1 Healthcare providers and services	18.9	11.9	33
2 Software	12.6	11.7	22
3 Commercial services and supplies	7.4	7.5	13
4 Healthcare equipment and supplies	5.7	3.3	10
5 Professional services	4.6	6.1	8

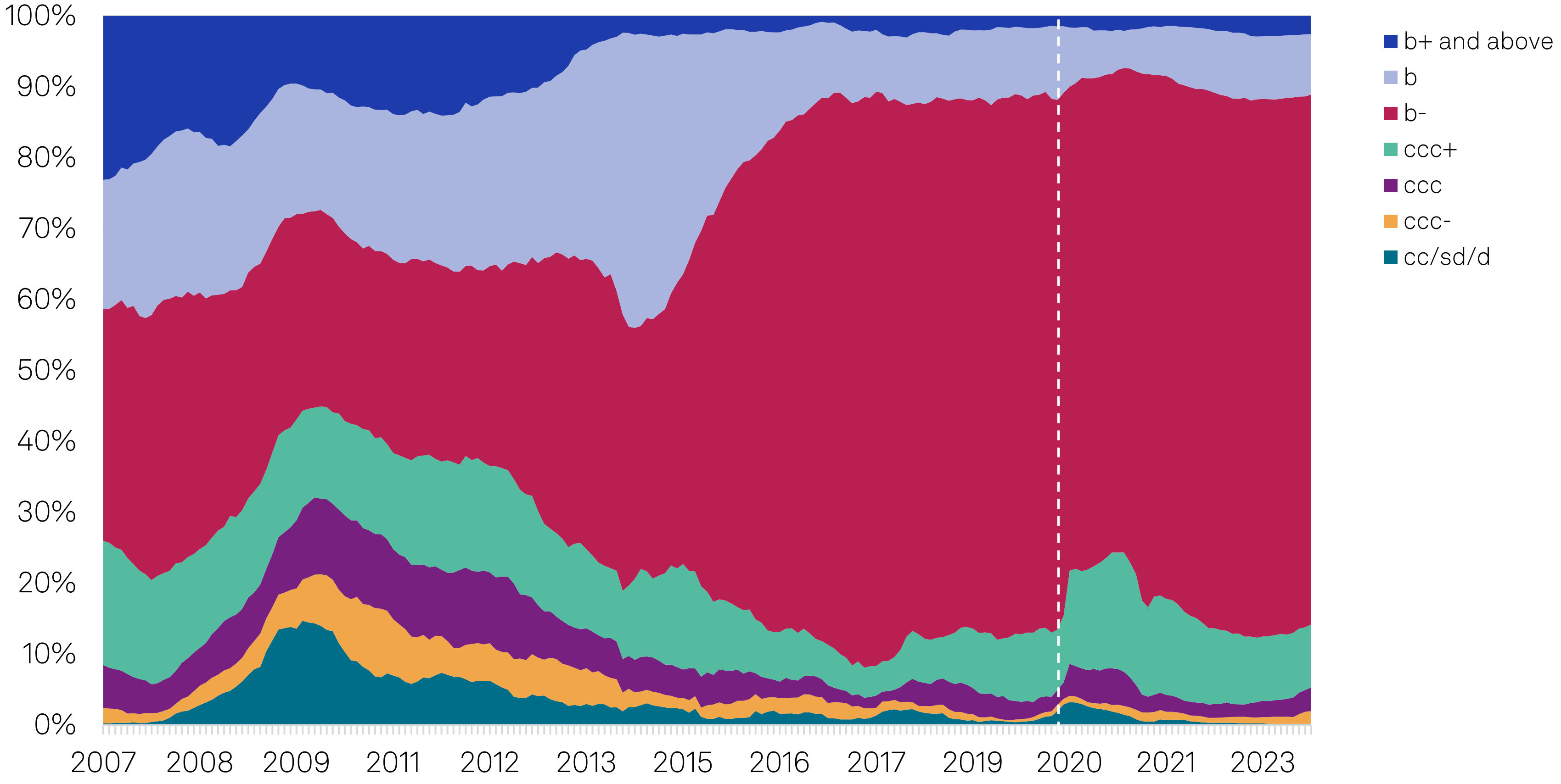
(i)Beginning in second-quarter 2023, we have excluded upgrades/downgrades outside the construct of a CLO. CLO--Collateralized loan obligation. YTD--Year to date.
Source: S&P Global Ratings.

Credit-estimate downgrades increased substantially in third-quarter 2023, due to:

- Upcoming maturities with no refinancing plans in place.
- Negative FFO because of higher interest rates.
- Unsustainable capital structures with high leverage.
- Covenant breaches where lenders issued “reservation of rights” letters.
- Inflation, resulting in increased wages and material costs.

Credit Estimates | Credit Quality Over The Years

Outstanding credit estimate distribution by issuer count (2007–Q3 2023)*



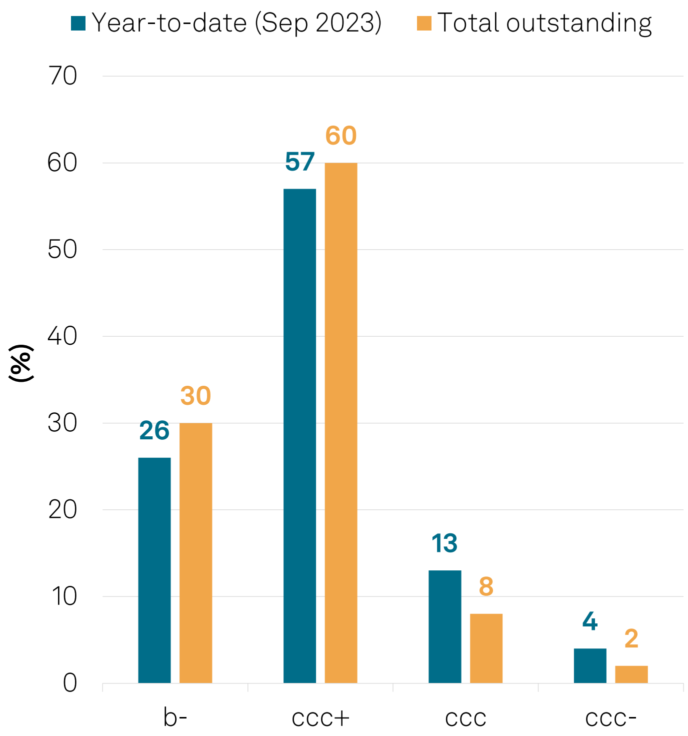
- Before the pandemic, about 75% of our outstanding credit estimates were ‘b-’.
- This dropped to about 71% after the pandemic induced downgrades of ‘b-’ credit estimates into the ‘ccc’ category.
- By 2023, over 75% of outstanding credit estimates were back at ‘b-’ as performance of companies rebounded,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

*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.

Credit Estimates | Recurring Revenue

Recurring revenue companies represent a small proportion (<4%) 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

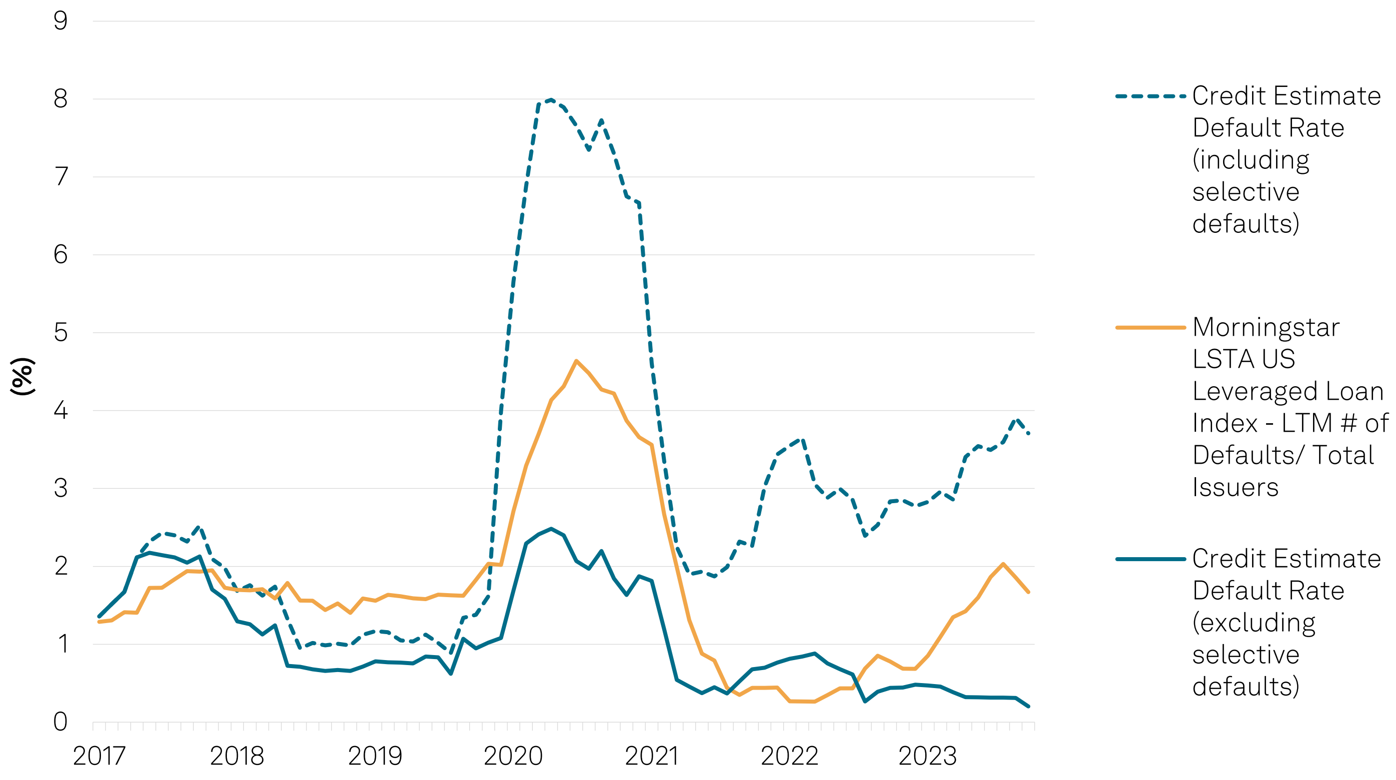
Metrics (median)	Year-to-date (Sept. 2023)	Total outstanding
No. of deals	54	99
EBITDA (mil. $)	5.85	4.12
Leverage	25.86	40.16
Cash interest coverage	0.29x	0.23x
Interest coverage	0.24x	0.19x
Capex (mil. $)	1.57	1.13
FOCF to debt (%)	-8.42	-6.06
Liquidity ratio	1.83	2.04

- 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. YTD--Year to date. Source: S&P Global Ratings.

Credit Estimates | Default Rate Comparison

One-year lagging default rate: credit estimates vs. Morningstar LSTA U.S. Leveraged Loan index



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 4%, as selective defaults picked up during the third quarter when distressed companies addressed liquidity concerns with A-to-E or interest deferral. The defaults during the pandemic were double the current defaults but came down since and have been hovering between 2% and 4% since.
- Defaults slowed down in the syndicated loan market, though. The trailing 12-month Morningstar LSTA US Leveraged Loan Index default rate dropped to 1.67% in September from 1.86% in August.
- If we exclude selective defaults and focus only on conventional defaults among credit estimated issuers (solid blue line), the default rate continues to trend down, reinforcing the view that there is very little by way of traditional defaults (chapter 11, general payment default, etc.).

Credit Estimates | Selective Defaults

Transition table for credit estimate selective defaults that occurred in 2023

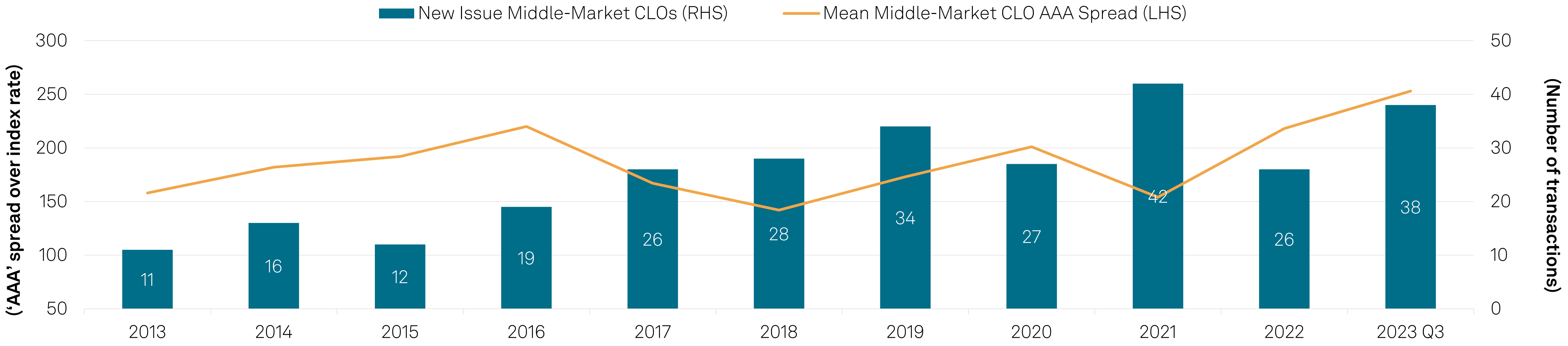
Credit estimate score post-selective default (%)

Credit estimate score pre-SD	b	b-	ccc+	ccc	ccc-	cc	Proportion higher post-SD	Proportion same post-SD	Proportion lower post-SD
b		100					0	0	100
b-		21	29	18	32		0	21	79
ccc+		17	33	42	8		17	33	50
ccc			12	44	22	22	12	44	44
ccc-			20	20	60		40	60	0

SD--Selective default. Source: S&P Global Ratings.

- The biggest reasons for selective defaults were A-to-E transactions followed by interest deferrals.
- Close to 80% of selective defaults that occurred in the ‘b-’ category were reassessed at the ‘ccc’ category post-selective default.
- Selective defaults is most prevalent amongst the healthcare providers and software sectors.

Middle-Market CLOs | Middle-Market CLO Issuance Has Grown



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Q3 2023
New Issue middle-market CLOs	11	16	12	19	26	28	34	27	42	26	38
Mean 'AAA' spread	158	182	192	220	167	142	173	201	154	218	253
Minimum 'AAA' spread	127	160	175	205	117	100	150	161	135	137	230
Maximum 'AAA' spread	180	205	210	264	205	170	185	262	172	280	285

CLO--Collateralized loan obligation. Sources: Leveraged Commentary & Data, S&P Global Ratings.

Middle-Market CLOs | 'CCC' Buckets Increase, Other Metrics Stable

- The increased count of lowered credit estimates in Q3 (slide 10) have resulted in a notable increase in 'CCC' buckets as well as default buckets across MM CLO portfolios.
- Haircuts from defaults and in a small handful of instances, excess 'CCC' exposures have resulted in O/C numerator haircuts, leading to a slight decline in junior O/C test cushions.
- However, at 6.9% the average middle-market CLO junior O/C test cushion remains large.

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

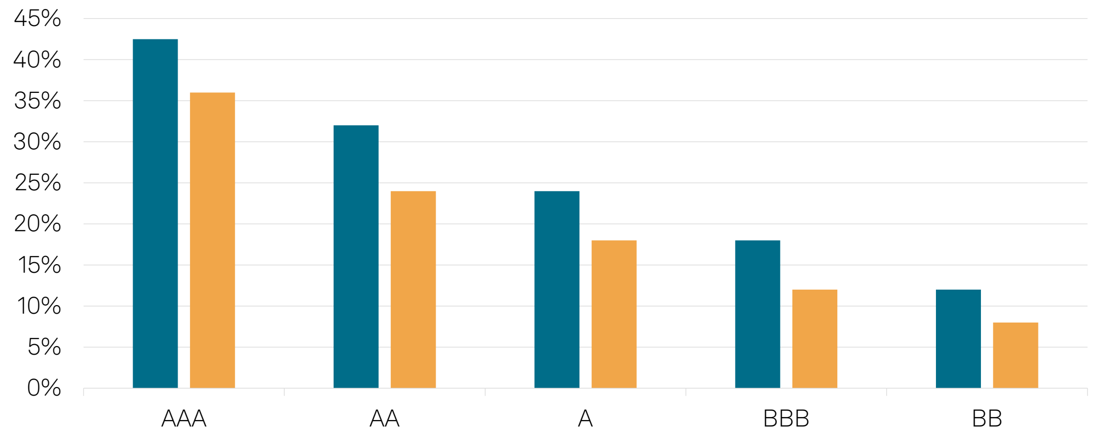
As of date	'B-' (%)	'CCC' category (%)	No rating/CE (%)	Nonperforming assets (%)	SPWARF	Jr. O/C cushion (%)	% of target par
9/30/2022*	72.84	9.58	6.54	0.15	3800	7.09	100.94
10/31/2022*	73.74	8.98	6.39	0.16	3786	7.12	100.98
11/30/2022*	73.23	9.19	6.37	0.23	3789	7.11	100.98
12/31/2022*	73.27	9.92	5.68	0.21	3783	7.17	101.00
1/31/2023*	73.55	10.05	5.54	0.26	3787	7.14	101.00
2/28/2023*	72.91	9.95	6.02	0.33	3798	7.10	100.99
3/31/2023*	72.98	9.93	6.05	0.32	3799	7.04	100.99
4/30/2023*	72.91	10.25	6.36	0.32	3813	7.00	101.00
5/31/2023*	72.89	10.09	6.79	0.31	3823	7.02	101.01
6/30/2023*	72.42	10.94	6.26	0.36	3825	6.94	101.04
7/31/2023*	71.61	11.64	6.47	0.34	3843	6.97	101.05
8/31/2023**	71.37	12.19	6.08	0.51	3856	6.90	101.07
9/21/2023***	71.23	12.32	6.12	0.47	3855	6.90	101.07

*Index metrics based on end of month ratings and pricing data and as of month portfolio data available. **index metrics based on 8/31/2023 ratings and pricing data and latest portfolio data available to us. ***index metrics based on 9/21/2023 ratings and pricing data and latest portfolio data available to us. Source: S&P Global Ratings.

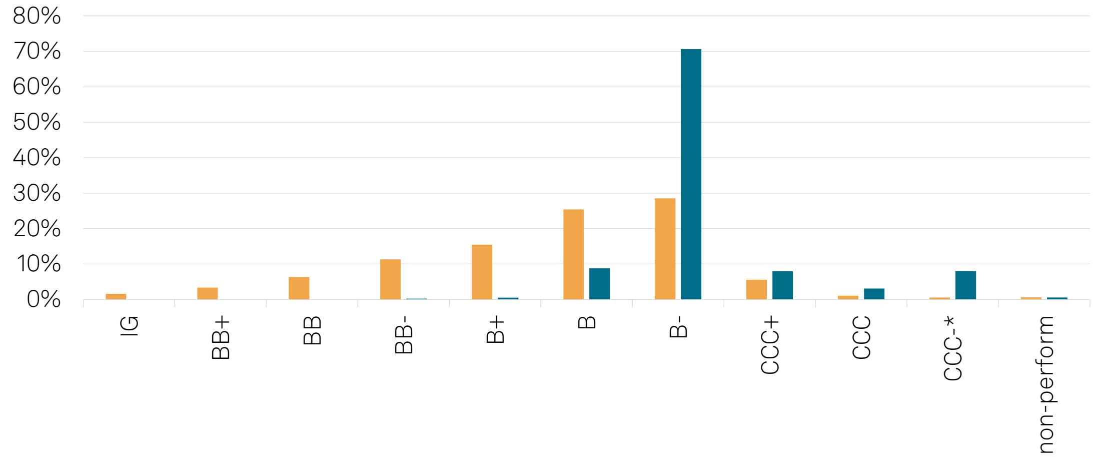
Middle-Market CLOs | Comparison Of Metrics Against BSL CLOs

Middle-market CLOs   Broadly syndicated loan CLOs

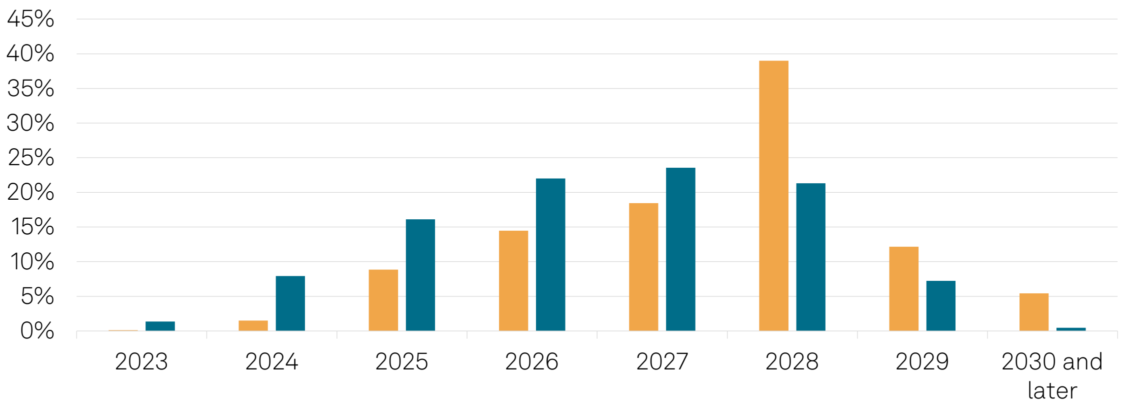
Median subordination of CLO tranches



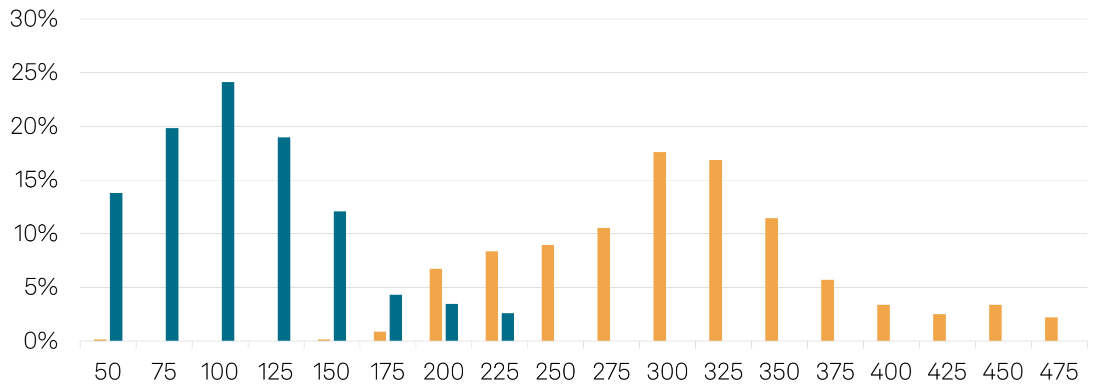
Ratings distribution of CLO obligors



Maturity distribution of CLO assets



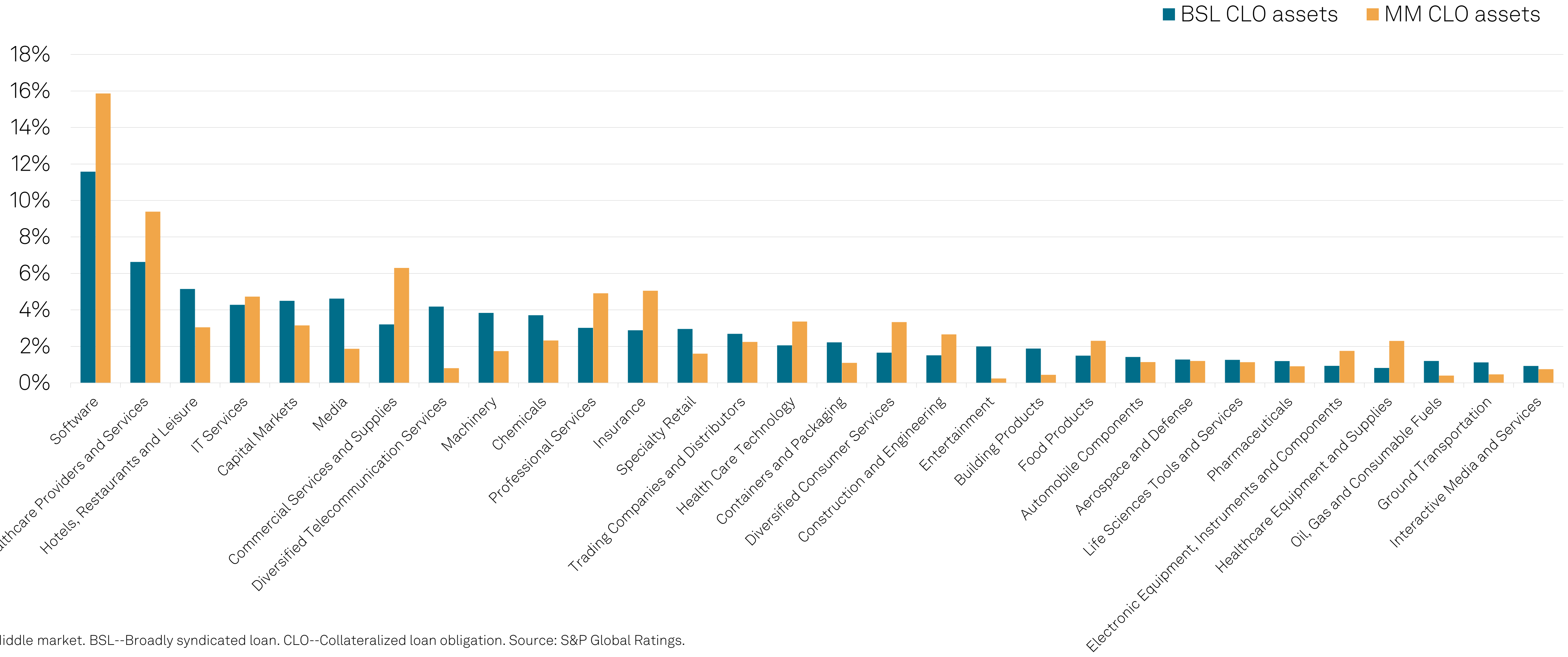
Number of obligors in each CLO



S&P Global Ratings

Middle-Market CLOs | Software And Healthcare Are Largest Industries

Top 30 industries (GICS categories) in MM CLO and BSL CLO collateral pools

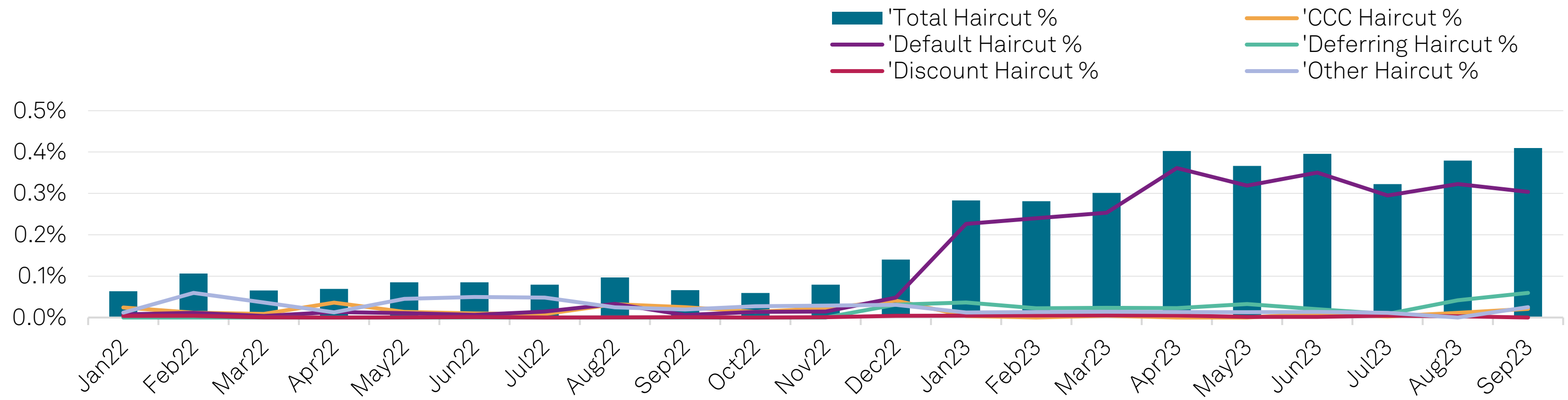


MM--Middle market. BSL--Broadly syndicated loan. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

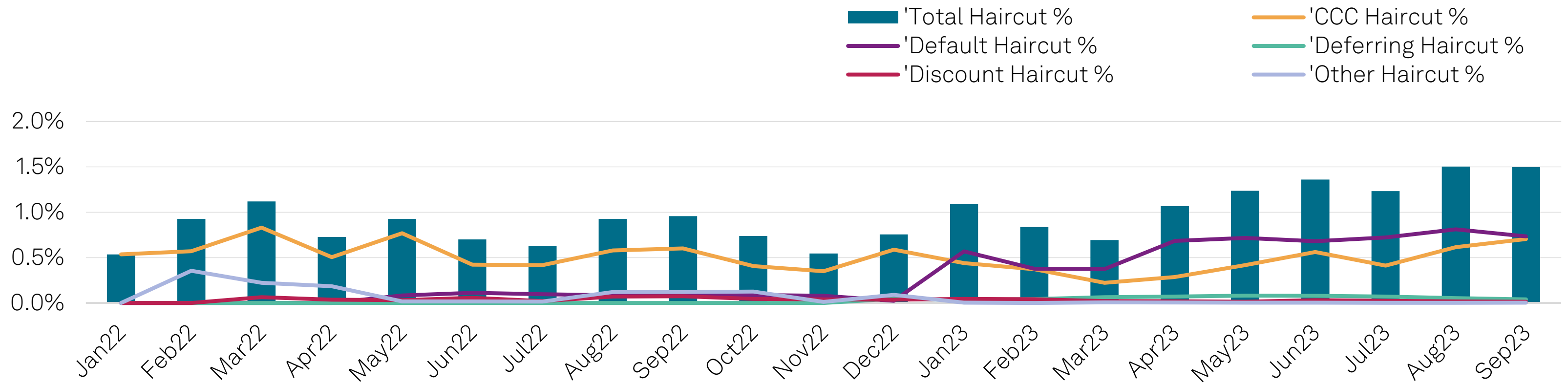
S&P Global Ratings

Middle-Market CLOs | O/C Test Cushions And Haircuts

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.

- Overcollateralization (O/C) cushions across reinvesting U.S. middle-market (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 third quarter 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 is higher than reinvesting transactions due to the senior note paydowns.

Middle-Market CLOs | Few Downgrades In 2020 (And None Since)

U.S. BSL CLO and middle-market CLO rating changes (2020-Q3 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	Total
BSL CLOs	3,786	Downgrades		19	464	10	4	7	2	4	5	1	3	3	7	5	24	558
		Upgrades			5	5		17	23	200	4	70	2	3	2	6	79	416
MM CLOs	553	Downgrades			7													7
		Upgrades							2	13	2	5	2	2		4	2	32

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

Middle-market 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:** Middle-market 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. Middle-market 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 13).

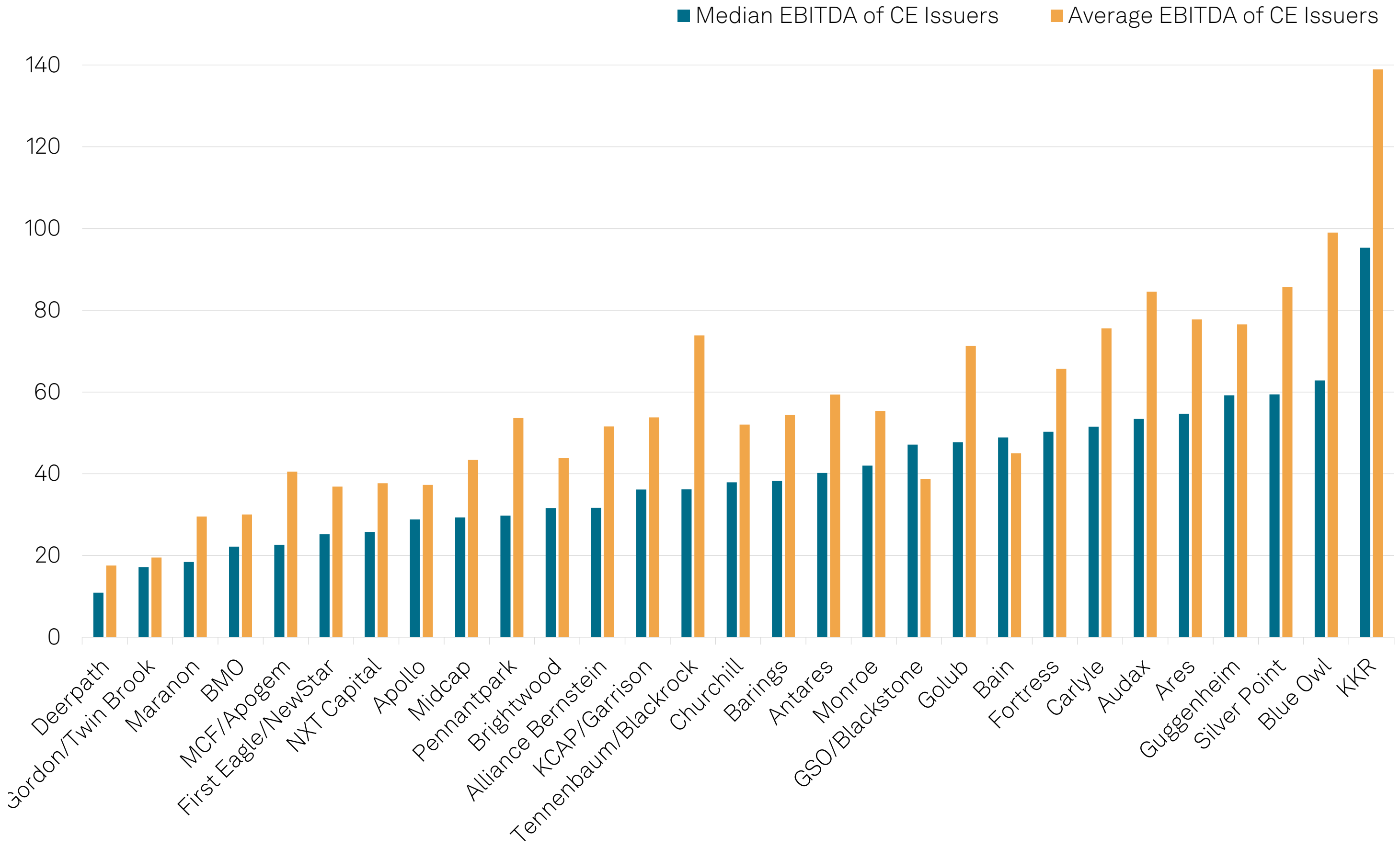
3) **Some sponsors injected cash into their companies:** This was done because, in some cases, sponsors saw value in infusing equity rather than losing control of the company in a payment default/bankruptcy scenario. In a more protracted downturn, however, the economic incentives to do this might be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

4) **CLO manager asset swaps:** Under their CLO indenture provisions, middle-market CLO managers can swap out distressed assets from the portfolio and replace them with loans from better-performing companies. Because middle-market 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 middle-market 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.

Middle-Market CLOs | Company Size Varies By Middle-Market CLO Manager

EBITDA of credit-estimated issuers held by MM CLO managers



MM--Middle market. CLO--Collateralized loan obligation. CE--Credit estimate. Source: S&P Global Ratings.

- There are about 1,700 issuers with loans held across the MM CLOs we rate, almost as many as the loans held in the BSL CLOs we rate.
- Since 2017, several managers have issued their inaugural MM CLO, adding to the number of unique credit estimated issuers.
- MM CLO managers may have a specialty across certain industries as well as certain sized companies.
  - Lower middle market: < $20 million
  - Core middle market: $20 million to $50 million
  - Upper middle market: $50 million to $100 million
- Median EBITDA of loans held by MM CLO managers can vary widely.

Middle-Market CLOs | Third-Quarter 2023 Middle-Market Manager Metrics

Manager	Largest GICS Industry (%)	Largest GICS industry	No. of GICS industries	Largest issuer exposure (%)	No. of issuers	DG:UG ratio in Q3 2023(i)	Credit estimated issuers (%)	Proportion credit estimated in Q3 2023 (%)	Median EBITDA of CE issuers	Average EBITDA of CE issuers	SPWARF (ii)	WAS (%)	WAM	% of MM CLO assets unique to manager	Manager with largest overlap	Proportion overlap (%)
Alliance Bernstein	34.17	Software	23	1.89	135	6:0	91.67	23.44	31.64	51.60	3909	5.66	3.49	46.25	Blue Owl	6.34
Angelo Gordon/ Twin Brook	19.89	Healthcare providers and services	32	2.19	92	0:0	92.64	1.49	17.19	19.52	3815	5.99	2.50	81.08	Maranon	1.50
Antares	11.62	Healthcare providers and services	45	1.11	318	14:4	90.05	29.84	40.20	59.37	3851	5.34	3.06	32.41	Churchill	12.27
Apollo	13.27	Professional services	16	5.65	25	1:0	91.20	5.65	28.84	37.29	3777	5.61	3.73	18.41	Midcap	12.57
Ares	16.29	Software	40	1.85	242	4:1	59.08	14.35	54.68	77.74	3862	5.35	3.46	27.11	Audax	12.73
Audax	14.75	Software	40	0.96	289	2:0	22.66	6.20	53.41	84.53	3644	4.65	4.03	26.98	Monroe	14.99
Bain	14.54	Professional services	25	3.76	40	1:0	93.37	28.09	48.90	45.03	3892	6.07	3.28	41.48	Antares	9.09
Barings	15.58	Software	37	2.48	136	10:1	79.48	42.36	38.29	54.35	3922	5.31	3.29	37.44	Churchill	9.32
Blue Owl	25.06	Software	42	2.89	217	10:3	80.17	46.37	62.84	99.00	3785	5.90	4.02	37.03	Antares	9.24
BMO	16.18	Healthcare providers and services	44	1.59	151	8:1	85.36	21.54	22.15	30.04	4202	5.24	2.93	50.34	Antares	6.61
Brightwood	21.99	Healthcare providers and services	23	5.00	58	6:0	79.52	57.8	31.62	43.83	3640	6.39	2.75	65.61	KCAP/ Garrison	4.95
Carlyle	11.82	Software	27	3.40	63	5:0	78.83	40.25	51.51	75.59	4067	6.21	3.67	15.62	KKR	5.83
Churchill	9.64	Healthcare providers and services	46	1.26	256	13:2	77.74	18.51	37.92	52.04	3939	5.29	3.63	29.78	Antares	12.27
Deerpath	16.63	Healthcare providers and services	40	1.92	154	3:2	83.66	10.79	10.91	17.56	3847	5.89	3.25	76.79	BMO	3.55
First Eagle/ NewStar	15.43	Healthcare providers and services	48	2.25	194	4:0	59.72	11.91	25.24	36.87	3842	5.57	3.37	39.91	Pennantpark	6.02

(i)Based on Q1 2023 exposure to companies with ratings/credit estimates raised and lowered in Q2 2023. Includes both rated obligors and credit estimated obligors. (ii)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. MM--Middle-market. CLO--Collateralized loan obligation. DG--Downgrade. UG--Upgrade. 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.

Middle-Market CLOs | Third-Quarter 2023 Middle-Market Manager Metrics Continued...

Manager	Largest GICS Industry (%)	Largest GICS industry	No. of GICS industries	Largest issuer exposure (%)	No. of issuers	DG:UG ratio in Q3 2023(i)	Credit estimated issuers (%)	Proportion credit estimated in Q3 2023 (%)	Median EBITDA of CE issuers	Average EBITDA of CE issuers	SPWARF (ii)	WAS (%)	WAM	% of MM CLO assets unique to manager	Manager with largest overlap	Proportion overlap (%)
Fortress	13.25	Hotels, restaurants, and leisure	42	4.29	138	4:0	61.88	18.82	50.26	65.67	3857	6.46	3.45	60.37	Blue Owl	6.99
Golub	23.87	Software	44	1.53	273	11:0	90.64	27.35	47.74	71.26	3869	5.67	3.55	50.04	Antares	8.87
GSO/Blackstone	19.29	Hotels, restaurants, and leisure	17	10.31	26	3:0	43.78	7.98	47.14	38.75	3955	5.12	2.18	31.62	Apollo	2.74
Guggenheim	11.51	Software	42	3.09	135	1:1	46.12	14.26	59.22	76.54	3920	5.14	3.72	32.22	Ares	8.22
KCAP/Garrison	14.28	Software	39	2.60	126	2:2	47.10	12.38	36.15	53.80	4002	5.75	3.29	24.65	Ares	9.30
KKR	12.81	Healthcare providers and services	25	3.56	66	2:1	77.60	29.02	95.28	138.92	4048	6.10	3.91	40.80	Golub	7.58
Maranon	9.49	Professional Services	35	1.98	126	5:1	91.90	10.87	18.43	29.56	3837	5.64	3.14	56.22	MCF/Apogem	6.17
MCF/Apogem	12.35	Healthcare providers and services	40	1.64	211	7:1	91.64	17.85	22.62	40.55	3775	5.28	3.18	36.88	Ares	9.23
Midcap	9.95	Healthcare providers and services	46	1.36	229	10:0	85.56	17.09	29.32	43.38	4035	5.86	3.43	41.68	Apollo	12.57
Monroe	16.35	Software	35	1.23	133	3:1	33.90	13.06	41.99	55.39	3718	4.95	4.08	27.19	Audax	14.99
NXT Capital	14.29	Healthcare providers and services	28	3.07	89	5:0	92.38	24.79	25.78	37.68	3982	5.38	3.00	31.00	Antares	6.48
Pennantpark	10.04	Media	34	1.88	135	3:1	77.40	11.84	29.78	53.66	3824	5.85	3.05	41.59	KCAP/Garrison	8.06
Silver Point	10.27	Software	32	2.85	50	1:0	47.44	9.87	59.44	85.69	4141	6.89	3.71	49.51	Fortress	5.56
Tennenbaum/Blackrock	26.64	Software	39	1.48	185	10:1	75.23	24.80	36.19	73.84	3865	5.76	3.96	31.22	Ares	9.29

(i)Based on Q1 2023 exposure to companies with ratings/credit estimates raised and lowered in Q2 2023. Includes both rated obligors and credit estimated obligors. (ii)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. MM--Middle-market. CLO--Collateralized loan obligation. DG--Downgrade. UG--Upgrade. 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.

Middle-Market CLOs | The Matrix: Third-Quarter 2023 Asset Overlap By Manager (%)

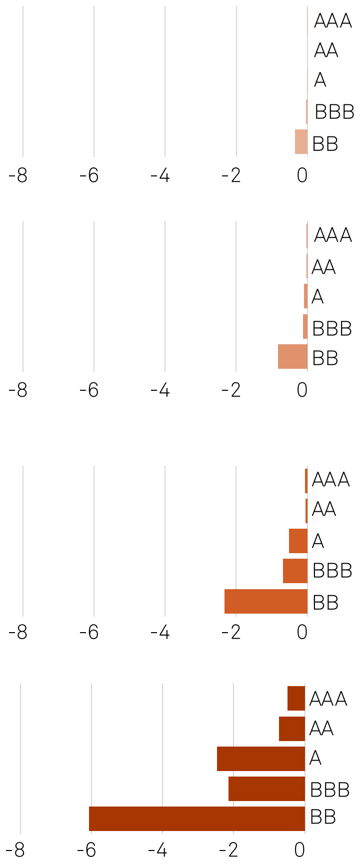
	Alliance Bernstein	Angelo Gordon/ Twin Brook	Antares	Apollo	Ares	Audax	Bain	Barings	Blue Owl	BMO	Brightwood	Carlyle	Churchill	Deerpath	First Eagle/ NewStar	Fortress	Golub	GSO/ Blackstone	Guggenheim	KCAP/ Garrison	KKR	Maranon	MCF/ Apogem	Midcap	Monroe	NXT Capital	Pennantpark	Silver Point	Tennenbaum/ Blackrock
Alliance Bernstein		0.00	2.95	0.00	6.33	1.42	1.06	1.34	6.34	1.58	0.98	3.56	2.03	2.30	0.00	3.75	5.88	0.27	1.73	4.89	2.41	1.23	3.97	4.60	1.45	3.39	1.47	2.23	6.32
Angelo Gordon/ Twin Brook	0.00		0.39	0.00	0.21	0.00	0.00	0.13	0.00	0.59	0.65	0.00	1.34	0.28	0.82	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.18	1.05	0.00	0.28	0.40	0.00	0.00
Antares	2.95	0.39		0.32	9.48	5.20	9.09	8.74	9.24	6.61	0.82	2.82	12.27	1.15	5.47	1.12	8.87	0.26	2.30	3.34	3.79	4.39	7.10	3.64	2.32	6.48	4.29	0.59	8.31
Apollo	0.00	0.00	0.32		0.00	0.00	0.00	1.59	0.00	0.60	1.62	0.00	0.44	0.00	2.19	0.00	0.00	2.74	0.00	1.18	0.00	0.00	0.96	12.57	0.53	0.00	2.69	0.00	0.00
Ares	6.33	0.21	9.48	0.00		12.73	1.73	4.65	5.87	2.20	0.47	2.52	7.06	0.70	3.69	2.66	7.83	1.52	8.22	9.30	5.55	2.24	9.23	5.10	9.26	1.19	3.29	0.00	9.29
Audax	1.42	0.00	5.20	0.00	12.73		1.69	2.15	5.82	0.67	0.50	3.00	9.84	3.05	5.85	2.38	2.42	0.72	6.22	8.78	0.58	2.72	4.46	0.91	14.99	0.36	6.45	0.00	4.27
Bain	1.06	0.00	9.09	0.00	1.73	1.69		2.31	2.36	0.00	0.00	0.00	1.67	0.00	4.69	1.51	1.45	0.00	0.00	0.89	0.00	0.00	0.58	0.29	0.55	2.71	1.58	0.00	2.72
Barings	1.34	0.13	8.74	1.59	4.65	2.15	2.31		1.32	5.53	1.59	1.68	9.32	0.33	5.74	0.91	1.15	1.82	1.87	3.39	1.81	2.60	2.30	4.53	4.92	6.16	3.41	1.65	2.80
Blue Owl	6.34	0.00	9.24	0.00	5.87	5.82	2.36	1.32		0.86	0.25	5.22	2.90	1.06	1.03	6.99	8.23	0.00	4.22	0.96	5.77	1.07	2.88	0.43	1.72	1.76	2.61	0.42	7.96
BMO	1.58	0.59	6.61	0.60	2.20	0.67	0.00	5.53	0.86		1.09	0.80	2.11	3.55	1.86	0.00	0.47	0.28	1.58	6.09	0.00	4.13	3.32	3.34	1.27	5.74	0.66	1.26	0.00
Brightwood	0.98	0.65	0.82	1.62	0.47	0.50	0.00	1.59	0.25	1.09		0.52	1.07	0.49	1.26	1.05	1.01	0.00	0.00	4.95	0.85	0.41	0.49	1.20	0.50	0.00	1.90	3.26	3.23
Carlyle	3.56	0.00	2.82	0.00	2.52	3.00	0.00	1.68	5.22	0.80	0.52		2.01	0.00	4.71	0.37	3.07	1.48	3.22	1.68	5.83	0.00	2.21	2.54	1.76	0.00	1.49	2.98	0.68
Churchill	2.03	1.34	12.27	0.44	7.06	9.84	1.67	9.32	2.90	2.11	1.07	2.01		1.34	4.86	0.52	4.15	1.24	2.15	3.36	1.43	4.10	7.80	4.29	8.81	2.22	3.05	0.00	6.39
Deerpath	2.30	0.28	1.15	0.00	0.70	3.05	0.00	0.33	1.06	3.55	0.49	0.00	1.34		1.39	0.57	0.14	0.36	0.04	2.93	0.00	0.00	0.85	0.00	1.24	0.25	2.76	0.00	0.61
First Eagle/ NewStar	0.00	0.82	5.47	2.19	3.69	5.85	4.69	5.74	1.03	1.86	1.26	4.71	4.86	1.39		2.17	0.89	2.26	4.76	4.79	0.00	2.41	4.01	3.27	5.46	2.71	6.02	0.00	5.85
Fortress	3.75	0.00	1.12	0.00	2.66	2.38	1.51	0.91	6.99	0.00	1.05	0.37	0.52	0.57	2.17		1.45	0.01	3.23	3.73	1.18	0.00	0.00	1.82	0.96	1.13	1.43	5.56	5.14
Golub	5.88	0.00	8.87	0.00	7.83	2.42	1.45	1.15	8.23	0.47	1.01	3.07	4.15	0.14	0.89	1.45		0.11	1.51	4.02	7.58	0.99	3.04	1.46	0.79	2.25	0.81	0.12	7.93
GSO/ Blackstone	0.27	0.00	0.26	2.74	1.52	0.72	0.00	1.82	0.00	0.28	0.00	1.48	1.24	0.36	2.26	0.01	0.11		0.33	1.45	0.00	1.17	0.29	1.31	0.68	0.52	1.28	0.00	0.00
Guggenheim	1.73	0.00	2.30	0.00	8.22	6.22	0.00	1.87	4.22	1.58	0.00	3.22	2.15	0.04	4.76	3.23	1.51	0.33		4.01	1.23	1.18	0.11	1.63	7.49	0.00	2.51	1.52	7.08
KCAP/Garrison	4.89	0.00	3.34	1.18	9.30	8.78	0.89	3.39	0.96	6.09	4.95	1.68	3.36	2.93	4.79	3.73	4.02	1.45	4.01		0.00	1.61	0.29	2.90	4.41	2.55	8.06	1.00	4.49
KKR	2.41	0.00	3.79	0.00	5.55	0.58	0.00	1.81	5.77	0.00	0.85	5.83	1.43	0.00	0.00	1.18	7.58	0.00	1.23	0.00		1.09	1.44	2.66	2.13	1.30	0.00	0.00	6.37
Maranon	1.23	1.50	4.39	0.00	2.24	2.72	0.00	2.60	1.07	4.13	0.41	0.00	4.10	0.00	2.41	0.00	0.99	1.17	1.18	1.61	1.09		6.17	1.77	1.20	5.37	2.12	1.41	3.74
MCF/Apogem	3.97	0.18	7.10	0.96	9.23	4.46	0.58	2.30	2.88	3.32	0.49	2.21	7.80	0.85	4.01	0.00	3.04	0.29	0.11	0.29	1.44	6.17		7.50	1.85	5.63	2.38	0.52	4.08
Midcap	4.60	1.05	3.64	12.57	5.10	0.91	0.29	4.53	0.43	3.34	1.20	2.54	4.29	0.00	3.27	1.82	1.46	1.31	1.63	2.90	2.66	1.77	7.50		3.03	3.16	3.89	0.31	3.42
Monroe	1.45	0.00	2.32	0.53	9.26	14.99	0.55	4.92	1.72	1.27	0.50	1.76	8.81	1.24	5.46	0.96	0.79	0.68	7.49	4.41	2.13	1.20	1.85	3.03		1.77	3.78	1.07	6.48
NXT Capital	3.39	0.28	6.48	0.00	1.19	0.36	2.71	6.16	1.76	5.74	0.00	0.00	2.22	0.25	2.71	1.13	2.25	0.52	0.00	2.55	1.30	5.37	5.63	3.16	1.77		3.49	0.00	1.54
Pennantpark	1.47	0.40	4.29	2.69	3.29	6.45	1.58	3.41	2.61	0.66	1.90	1.49	3.05	2.76	6.02	1.43	0.81	1.28	2.51	8.06	0.00	2.12	2.38	3.89	3.78	3.49		2.24	5.79
Silver Point	2.23	0.00	0.59	0.00	0.00	0.00	0.00	1.65	0.42	1.26	3.26	2.98	0.00	0.00	0.00	5.56	0.12	0.00	1.52	1.00	0.00	1.41	0.52	0.31	1.07	0.00	2.24		4.49
Tennenbaum/ Blackrock	6.32	0.00	8.31	0.00	9.29	4.27	2.72	2.80	7.96	0.00	3.23	0.68	6.39	0.61	5.85	5.14	7.93	0.00	7.08	4.49	6.37	3.74	4.08	3.42	6.48	1.54	5.79	4.49	

Source: S&P Global Ratings.

Rating Stress Scenarios | How Resilient Are Middle-Market CLO Ratings?

	Scenario	Impact across CLO sample
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

Model-determined impact: average notches off current rating



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

- 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.

Rating Stress Scenarios | How Resilient Are Middle-Market 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.

Snapshot | Middle-Market Vs. BSL CLOs

	Middle-market loan CLOs (MM CLOs)	Broadly syndicated loan CLOs (BSL CLOs)
Proportion of U.S. CLOs (1Q 2023)	About 9% of total U.S. CLOs by par About 16% of SPGR-rated CLOs by par	About 91% of total U.S. CLOs by par About 84% of SPGR-rated U.S. CLOs by par
Size of median CLO (par $)	About $475 million	About $500 million

MM and BSL loan attributes	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)
		Senior secured loans to larger companies:
		• EBITDA greater than $100 million; and,
		• Loan facility sizes greater than $500 million.

Source of CLO collateral	Some MM CLO managers (or their affiliates) are direct lenders and issue some/most of the loans in their CLOs	BSL CLO managers purchase the loans for their CLOs in the open market to create a portfolio
Typical issuer motivation	Some MM CLO managers use CLOs as a means to fund their loan business and maintain diverse funding sources	BSL CLO managers typically use BSL CLOs as a means to build assets under management and generate fee income
CLO manager relationship with borrower	Direct lender or Investor	Investor
Risk retention	MM CLOs are generally subject to risk retention since the manager is the issuer of some/all the loans in the CLO	U.S. BSL CLOs are generally not subject to risk retention since the manager acquires the loans in the open market
Loan covenants	The smaller the loan, the more likely it is to have maintenance covenants and more restrictive provisions*	Covenant-lite loans are the norm (80% plus of BSL loan market) along with looser provisions
CLO equityholder	Most MM CLO managers hold their CLO equity, although some are now exploring syndicating	Historically most BSL CLO managers have placed CLO equity with third-party investors, although this hasn't been true in 2023 year to date
Junior-most 'AAA' subordination	Typically ranges from 40% to 46% (median is 42.5%)	Typically ranges from 34% to 39% (median is 36%)
Source of ratings/implied ratings	Credit estimates typically cover > 60% of the issuers in MM CLOs	S&P Global Ratings has ratings on more than 95% of BSL loan issuers
Rating/credit estimate profile	See slide 18	See slide 18
Typical spreads of loans within portfolio	5.5%	3.5%
Maturity of loans	See slide 18	See slide 18
Number of obligors in CLO pool	See slide 18	See slide 18
Number of industries in CLO pool	Typical MM CLO 15 to 20 industries	Typical BSL CLO has loans from ≈ 24 industry sectors

Source: S&P Global Ratings.

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