

S&P Global
Ratings

Middle-Market CLO And Private Credit Quarterly: Harbor In The Tempest?

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This report does not constitute a rating action



Middle-Market Lending Key Takeaways

Takeaways

- 2022 saw more credit estimate upgrades than downgrades. However, this trend reversed in the fourth quarter. The slowdown in economic growth, coupled with inflationary pressures and rising interest rates--and the consequent pressure on margins--weighed heavily on companies with high leverage and low interest coverage ratios.
- Credit estimate upgrades continued to outpace downgrades by a ratio of 1.35 to 1 in 2022 compared to 1.31 to 1 for all of 2021. Improved earnings and better balance sheets have seen many middle-market companies become candidates for upgrade.
- Among rated loan issuers, we expect the trailing-12-month Morningstar LSTA Leveraged Loan Index default rate to more than double to 2.5% by September 2023 under our base case, which is in line with the long-term historical average rate of 2.5%. Under our pessimistic case, we think defaults could increase to 4.5% over the same period.
- Selective defaults have seen a slight uptick as companies restructured terms of payment given macro-economic headwinds. We expect selective defaults to continue to rise as more companies will look to restructure outside of the bankruptcy process. From 2020 through third-quarter 2021, conventional defaults among credit estimated obligors were significantly lower than conventional defaults among rated broadly syndicated loan (BSL) loan issuers, partly due to many amendments and other actions taken on middle-market loans that averted payment defaults.

Key Risks

- S&P Global Ratings forecasts a mild recession for the U.S. in 2023. We have lowered our GDP forecasts to 1.6% for 2022 and -0.1% for 2023.
- Cost inflation, supply issues, and labor constraints leading to margin compression could result in a pickup in credit estimate downgrades.

Middle-Market CLO Key Takeaways

Takeaways

- One middle-market CLO transaction saw two obligor defaults in fourth-quarter 2022, dropping the cushion on its junior-most overcollateralization (O/C) ratio test to 2.06% from 4.73%. This was enough to (very slightly) reduce the average junior O/C cushion in our index of middle-market CLO performance metrics, to 7.08% from 7.13% at the start of December 2022. Given the size of the average cushion, though, most middle-market CLOs are a long way off from triggering an O/C test (see slide 11).
- The typical middle-market U.S. collateralized loan obligation (CLO) has much lower obligor diversity within its portfolio than a typical BSL CLO transaction. But given that many middle-market CLO managers originate some of the assets in their CLO portfolios, there is much lower asset overlap and greater asset diversity *between* CLOs from different middle-market CLO managers. See slide 16 for a full matrix of asset overlap between different middle-market CLO managers.
- We provide other metrics at the CLO manager level on slide 17 and the largest obligors held by two or more middle-market CLO managers on slide 18.
- The level of asset purchases/new assets being added to middle-market CLO portfolios dropped during the year, to 5.33% of target par in fourth-quarter 2022 from 11.70% of target par in first-quarter 2022 (see slide 15). We attribute this to lower asset amortization and fewer loan refinancings in a less accommodating market.
- Middle-market CLO par build was relatively strong in 2022, with the average CLO in our index (see slide 11) ending the year at 101.23% of target par, up from 100.76% of target par in January 2022. This is at least partly due to new loans being added to the portfolios at less than par (often 97.5% or 98%). However, the rate of par growth slowed during the year, especially in Q4 2022, as the rate of new assets being added to CLO portfolios dropped.
- Middle-market CLOs saw few downgrades during the pandemic, with only seven ratings lowered during 2020, which is about 1.3% of the outstanding middle-market CLO ratings, versus 13.0% of BSL CLO ratings lowered during 2020. On slide 12, we discuss some of the reasons why.

Credit Estimates | Median Leverage And Interest Coverage By Sector

Top 10 Industries With The Highest S&P Global Ratings Calculated Leverage Ratios In 2022

Industry	Median of debt/EBITDA (x)
Internet software and services	8.46
Software	7.92
Road and rail	7.85
Real estate management and development	7.54
Insurance	7.38
Food products	7.33
Aerospace and defense	7.26
Wireless telecommunication services	7.15
Distributors	6.96
Life sciences tools and services	6.90

Source: S&P Global Ratings.

Top 10 Industries With The Lowest S&P Global Ratings Calculated Interest Coverage Ratios In 2022

Industry	Median interest coverage (x)
Software	1.42
Real estate management and development	1.53
Wireless telecommunication services	1.59
Aerospace and defense	1.66
Textiles, apparel, and luxury goods	1.80
Household products	1.86
Internet software and services	1.89
Road and rail	1.89
Capital markets	1.89
Health care technology	1.93

Source: S&P Global Ratings.

Middle-Market CLOs | Growth In Outstanding Credit Estimates

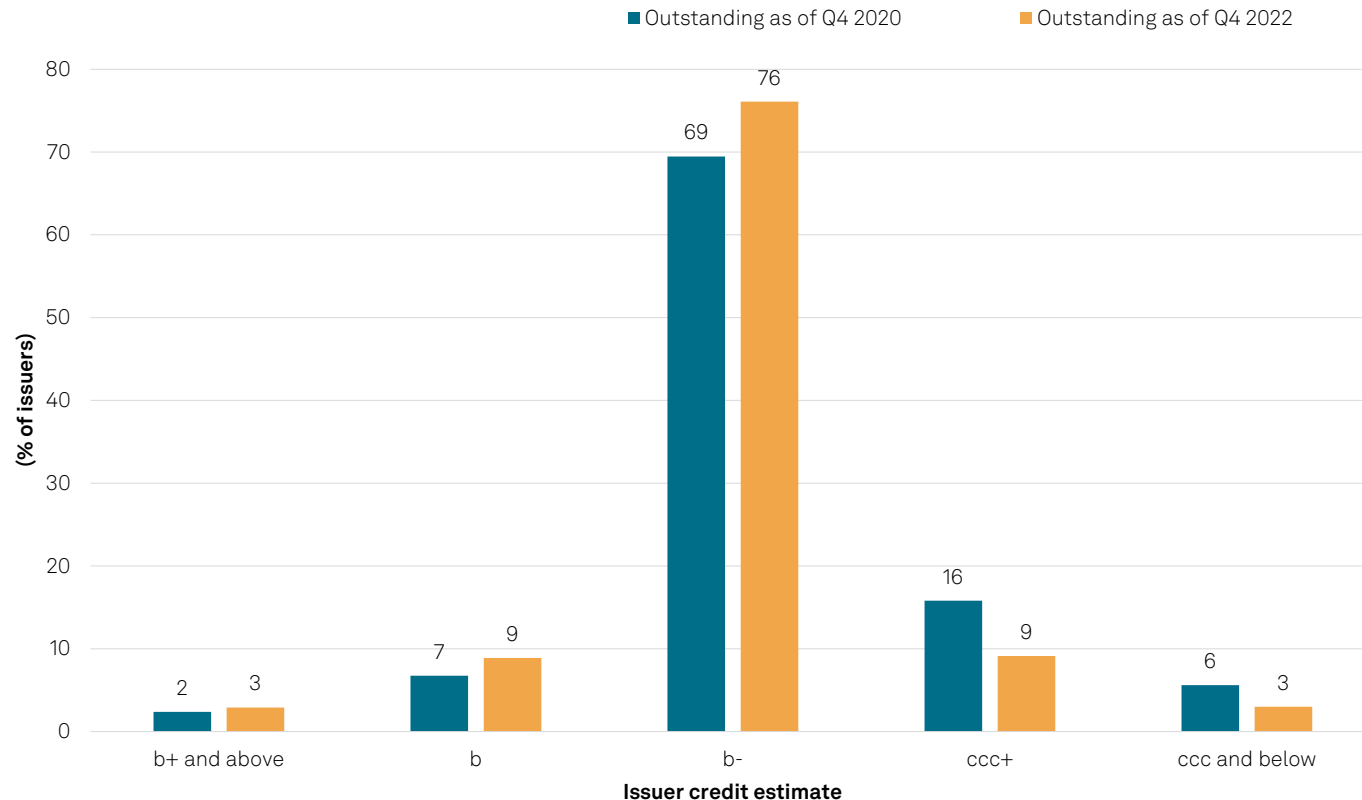
Number Of Outstanding S&P Global Ratings Credit Estimates (2012 – Q4 2022)(i)



(i) 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.

Middle-Market CLOs | Credit Estimate Score Distribution

Overall Credit Estimate Distribution By Issuer Count(i)

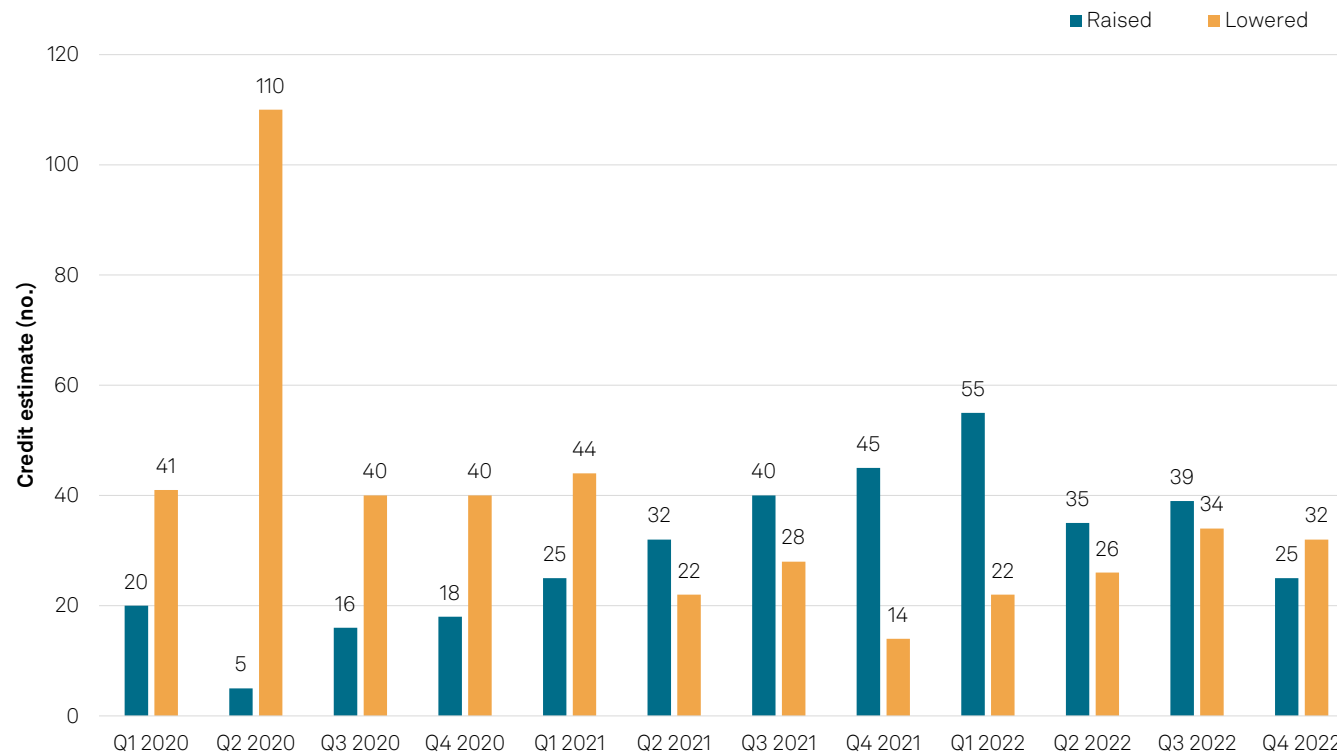


- Before the pandemic, about 75% of our outstanding credit estimates were 'b-'.
- This dropped to about 69% after the pandemic induced downgrades of 'b-' credit estimates into the 'ccc' category.
- By 2022, over 75% of outstanding credit estimates were back at 'b-' as performance of companies rebounded, and many obligors saw their credit estimates raised back to 'b-' from the 'ccc' range.

(i) 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.

Middle-Market CLOs | Credit Estimates Raised And Lowered

Credit Estimates Raised And Lowered By Quarter (2020 – Q4 2022)



Source: S&P Global Ratings.


- 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 second-quarter 2021 forward, upgrades have continued to outpace downgrades, until the fourth quarter of 2022.
- We can expect to see downgrades to rise from margin compression due to increased borrowing costs, inflation, and labor constraints.

Credit Estimates

Raised And Lowered By Sector


As Of Q4 2022

154 Upgrades In 2022



Top five sectors upgraded (overall percentage of upgrades) (%)			Sector exposure of total credit estimates (%)
1	Healthcare Providers and Services	11.0	12.4
2	Hotels, Restaurants and Leisure	9.7	3.0
3	Software	9.7	13.9
4	Commercial Services and Supplies	7.8	5.8
5	Diversified Consumer Services	5.2	3.9

114 Downgrades In 2022



Top five sectors downgraded (overall percentage of downgrades) (%)			Sector exposure of total credit estimates (%)
1	Software	16.7	13.9
2	Healthcare providers and services	9.6	12.4
3	Food products	7.0	1.9
4	Commercial services and supplies	6.1	5.8
5	Professional services	5.3	5.1

Source: S&P Global Ratings.

Drivers of raised credit estimates:

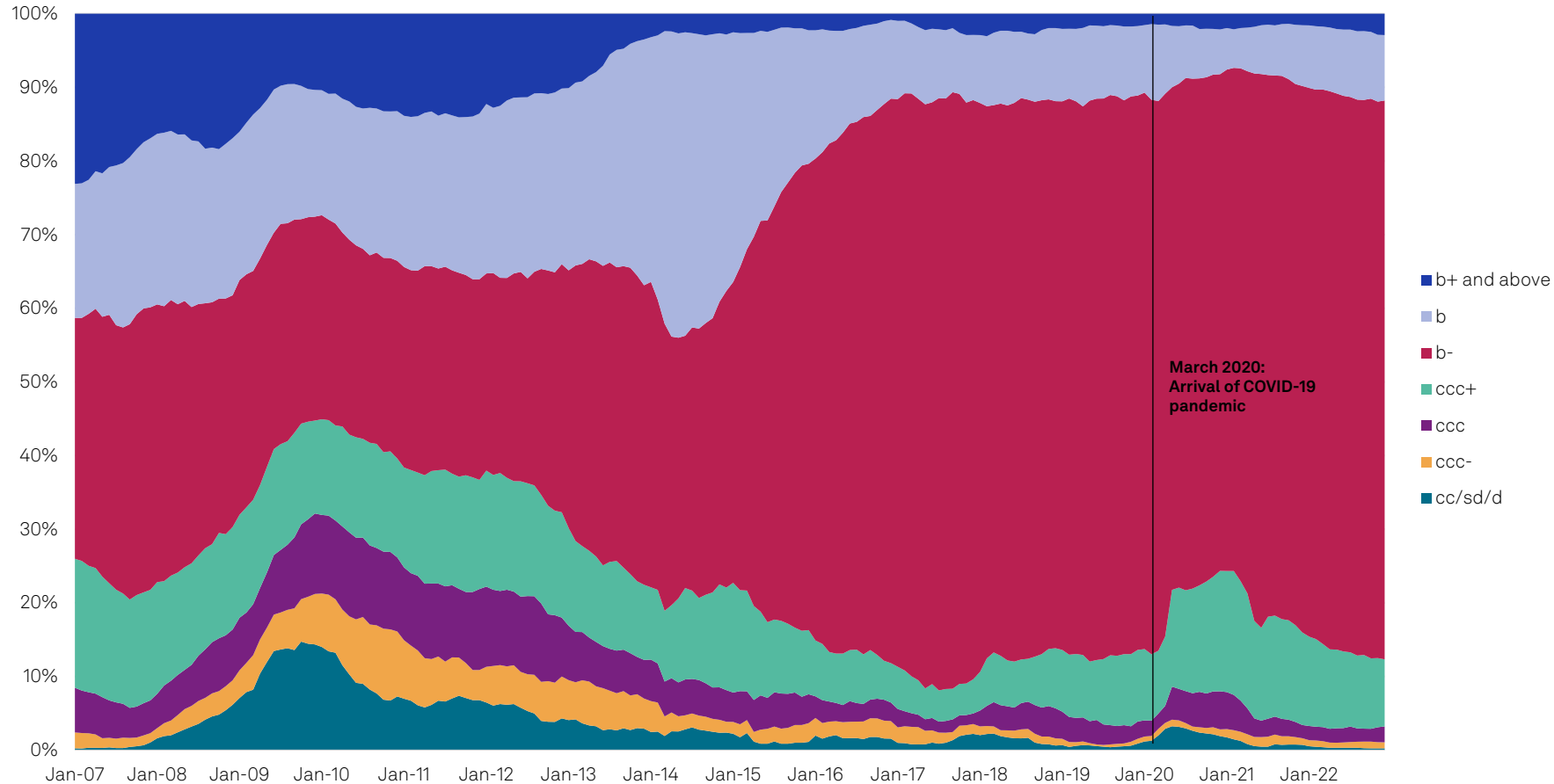
- Growth in EBITDA
- Decrease in leverage
- Rebound from COVID-19
- Improved interest coverage
- Better operational performance

Drivers of lowered credit estimates:

- High leverage
- Weak liquidity
- Inflationary pressure
- Supply chain disruptions
- Acquisitive growth strategy

Credit Estimates | Credit Quality Over The Years

Outstanding Credit Estimate Distribution By Issuer Count, (2007–Q4 2022)(i)

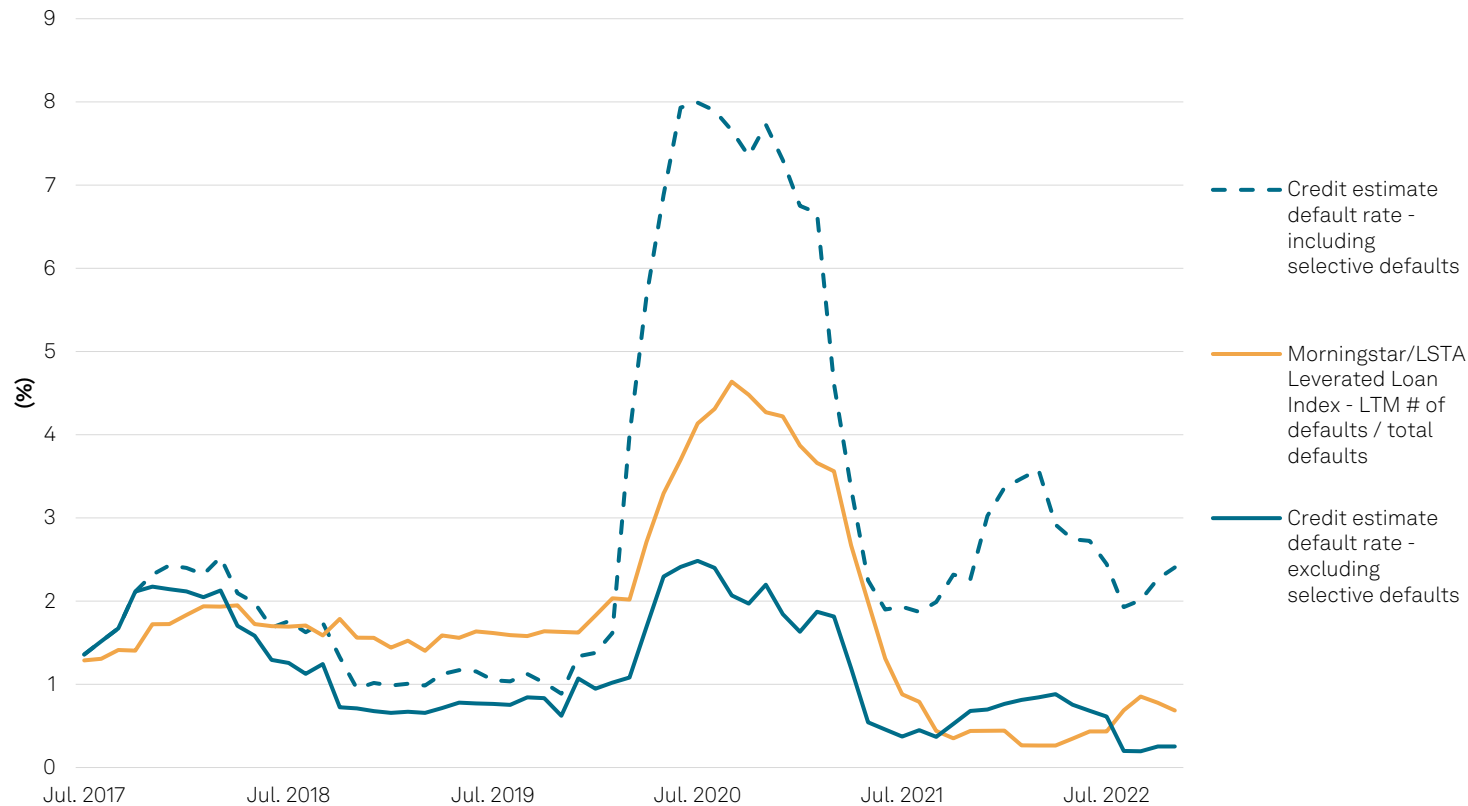


- Many of the companies we assign credit estimates to are financial sponsor-owned and generally highly levered.
- The median EBITDA of these companies was \$24 million, and the median adjusted debt was about \$175 million.
- Due to their weaker business and financial risk profiles, a large majority of these companies tend to have credit estimate scores at the lower end of the credit spectrum, especially 'b-'.

(i) 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.

Middle-Market Loan Performance | Default Rate Comparison

One-Year Lagging Default Rate: Credit Estimates Vs. LSTA Index



Source: S&P Global Ratings.

- After dipping to 0.26% in April, the Morningstar LSTA Leveraged Loan Index default rate (yellow line) among rated issuers increased to 0.69% in December.
- The dashed blue line, which includes both selective and conventional defaults among credit estimated issuers, declined sharply to below 2.0% in August 2022 after peaking at nearly 8% in 2020.
- If we exclude selective defaults and focus only on conventional defaults among credit estimated issuers (solid blue line), the default rate was much lower, increasing to about 2.5% in July 2020 before declining below 0.25% by November 2022.
- From 2020 through third-quarter 2021, conventional defaults among credit estimated obligors were significantly lower than conventional defaults among rated BSL loan issuers, partly due to many amendments and other actions on middle-market loans that averted payment defaults. This had the effect of raising the level of selective defaults among credit estimated issuers while decreasing the level of payment defaults.

Middle-Market CLOs | Par Build Slows But Credit Metrics Hold Steady

- The metrics below are averaged across an index of about 60 reinvesting S&P Global Ratings-rated U.S. middle-market (MM) CLOs issued across 21 different managers.
- The various credit metrics have held steady year to date, with the S&P Global Ratings' weighted average rating factor (SPWARF) remaining stable in 2022.
- Par balance has continued to gradually increase, along with junior overcollateralization (O/C) test cushions.
- Defaults reported within trustee reports led to notable declines in O/C ratios for one transaction in December, which affected the overall average O/C test cushion.

Credit Metrics For Collateral In Reinvesting S&P Global Ratings-Rated Middle-Market CLOs

Date	'B-' exposure (%) ⁽ⁱ⁾	'CCC' exposure (%) ⁽ⁱ⁾	No rating/CE (%) ⁽ⁱ⁾	Non-performing (%) ⁽ⁱ⁾	SPWARF	Jr. O/C test cushion (%)	Current par (% target par)
Jan. 1, 2022	71.75	10.15	8.86	0.30	3858	6.63	100.76
Feb. 1, 2022	70.54	9.54	10.05	0.23	3870	6.71	100.81
Mar. 1, 2022	71.75	9.06	8.97	0.27	3842	6.90	100.86
Apr. 1, 2022	70.66	9.10	9.80	0.26	3856	6.93	100.90
May 1, 2022	73.04	8.92	7.45	0.35	3812	6.83	100.97
Jun. 1, 2022	73.09	9.22	7.12	0.31	3805	6.96	101.00
Jul. 1, 2022	74.19	9.12	7.16	0.37	3819	7.01	101.05
Aug. 1, 2022	73.61	8.80	8.27	0.32	3840	7.03	101.08
Sep. 1, 2022	73.02	9.06	8.10	0.26	3829	7.02	101.12
Oct. 1, 2022	73.59	9.00	7.74	0.24	3824	7.06	101.16
Nov. 1, 2022	73.72	9.54	7.30	0.22	3827	7.14	101.18
Dec. 1, 2022	73.51	9.82	7.13	0.22	3822	7.13	101.18
Jan. 1, 2023	73.71	10.28	6.40	0.21	3813	7.08	101.23

⁽ⁱ⁾By par amount as proportion of total CLO collateral. CLO--Collateral loan obligation. CE--Credit enhancement. O/C--Overcollateralization. SPWARF-S&P Global Ratings' weighted average rating factor. -Source: S&P Global Ratings.

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

U.S. BSL CLO And Middle-Market CLO Rating Changes (2020-2022)

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	Total
BSL CLOs	3,786	Downgrades		19	464	10	4	7	2	4	5	1	3	3	522
		Upgrades			5	5		17	23	200	4	70	2	3	329
MM CLOs	553	Downgrades			7										7
		Upgrades							2	13	2	5	2	2	26

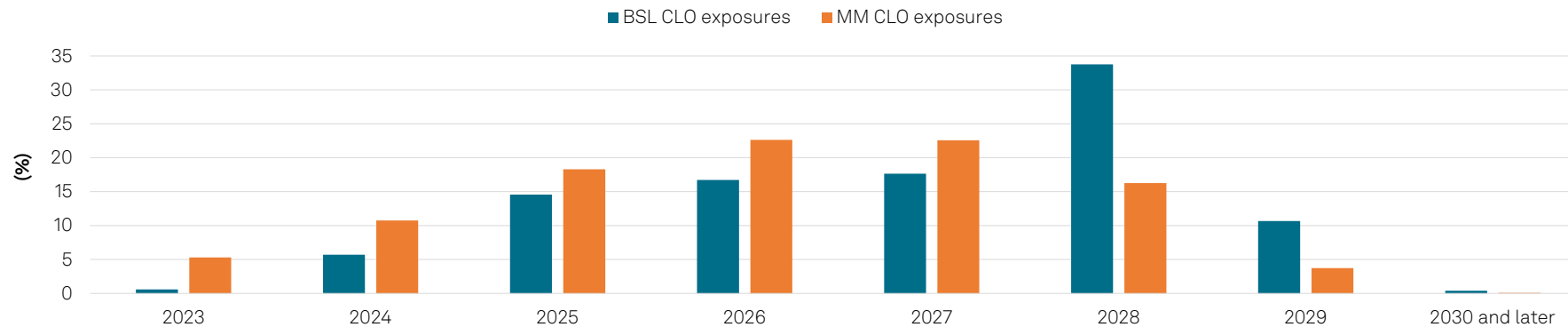
BSL--Broadly syndicated loan. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

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.
- 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 amort into the final bullet, allowing a company to payment-in-kind (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 on these loans (see slide 10).
- 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.

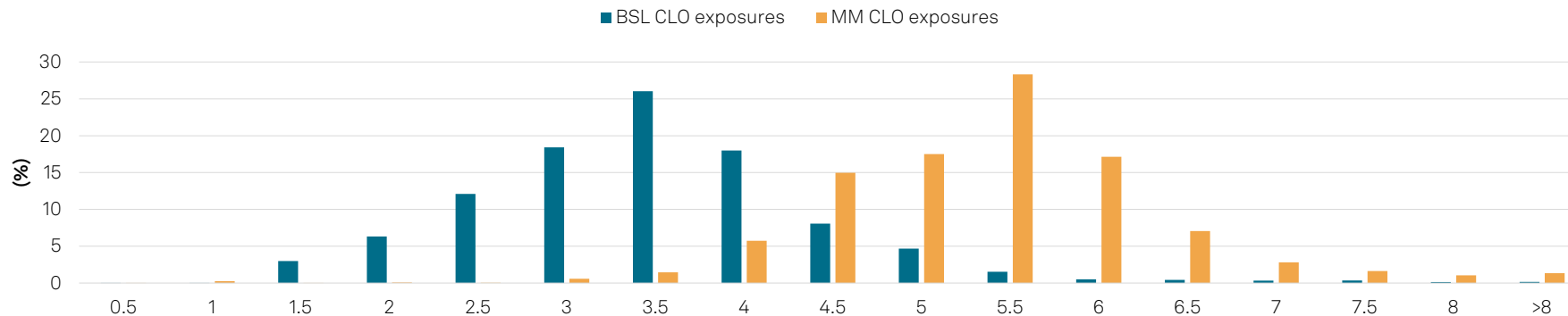
Middle-Market CLOs | Maturity Wall And Loans Spreads Vs. BSL CLO Assets

BSL CLO Vs. MM CLO Loan Maturity Wall



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

BSL CLO Vs. MM CLO Loan Spreads



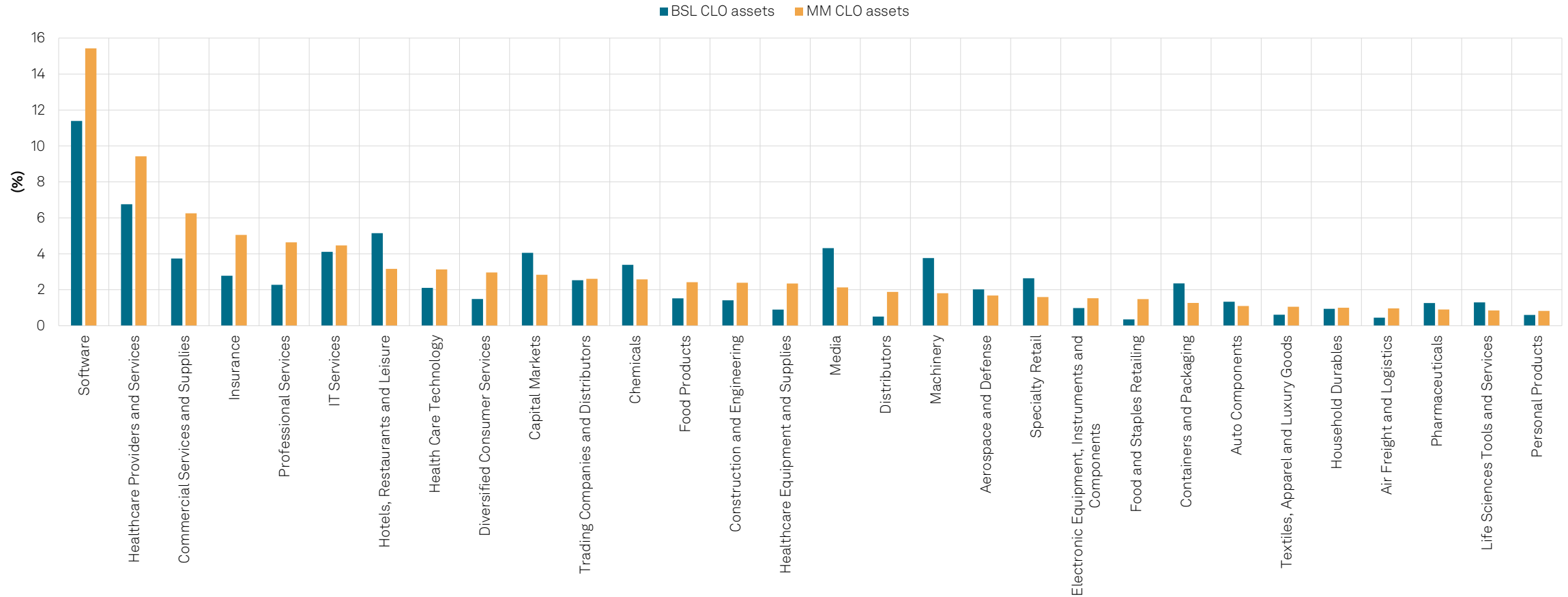
MM--Middle market. BSL--Broadly syndicated loan. CLO--Collateralized loan obligation. Source: S&P Global Ratings.

Comparing BSL CLOs and MM CLOs:

- The maturity wall for loans within BSL CLOs is pushed out considerably further than for the loans within MM CLO transactions.
- Spreads above LIBOR/SOFR are higher for loans in MM CLOs by an average of about 1.9% compared to loans in BSL CLO transactions.
- Credit spreads widened for both middle-market and BSL new issue loans starting in late first-quarter 2022 for BSL loans and third-quarter 2022 for MM loans.

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.

Middle-Market CLOs | Purchases And Sales In 2022

Quarter	Average purchase price	Purchases as % of target par	Average sale price	Sales as % of target par
Q1 2022	98.68	11.70	98.81	3.20
Q2 2022	98.81	8.02	99.13	2.26
Q3 2022	98.20	6.63	98.09	1.77
Q4 2022	97.91	5.33	97.71	2.92

Source: S&P Global Ratings.

S&P Global Ratings MM CLO Asset Trades By Issuer Rating Or Credit Estimate In Fourth-Quarter 2022

Rating category	Purchase (% of trades)	Avg purchase price	Sales (% of trades)	Avg sale price
bb category	0.01	97.50	1.21	96.87
b+	0.03	97.50	0.84	97.78
b	9.00	96.87	10.50	98.19
b-	63.61	97.87	63.72	98.49
ccc category	9.51	98.56	21.13	95.06
No CE at time of purchase	17.84	98.23	2.60	98.65

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

- Volume of purchases has declined throughout 2022, as prepayments have slowed.
- Average price of purchases and sales (as reported within trustee reports) were similar, resulting in steady portfolio par balance across MM CLOs in 2022.
- Sales of asset from 'ccc' obligors, as a proportion of fourth-quarter 2022 sales, is notably larger than that of purchases; we think this is evidence of manager de-risking.
- Sale prices of assets from 'ccc' obligors were also slightly lower than average.

Middle-Market CLOs | The Matrix: Q4 2022 Asset Overlap By Manager

	Alliance Bernstein	Angelo Gordon/Twin Brook	Antares	Apollo	Ares	Audax	Bain	Barings	BMO	Brightwood	Carlyle	Churchill	Deerpath	First Eagle/NewStar	Fortress	Golub	GSO/Blackstone	Guggenheim	KCAP/Garrison	KKR	Maranon	MCF/Madison	Midcap	Monroe	NXT Capital	Owl Rock	Pennantpark	Silver Rock	Tennenbaum/Blackrock
Alliance Bernstein	0.0%	2.6%	0.0%	5.6%	0.9%	1.9%	1.4%	1.6%	0.9%	3.8%	2.1%	1.2%	0.0%	2.3%	5.9%	0.3%	1.3%	4.9%	2.4%	1.6%	3.5%	5.1%	1.3%	2.8%	3.1%	1.6%	2.3%	4.2%	
Angelo Gordon/Twin Brook	0.0%	0.2%	0.0%	0.3%	0.0%	0.0%	0.1%	2.2%	0.0%	0.0%	0.6%	0.0%	1.2%	0.0%	0.0%	0.7%	0.0%	1.8%	0.0%	1.3%	0.3%	3.1%	0.0%	0.3%	0.0%	0.2%	0.0%	0.0%	
Antares	2.6%	0.2%	0.0%	7.9%	4.9%	5.9%	10.1%	7.7%	1.0%	2.8%	13.0%	1.4%	7.0%	1.6%	7.4%	0.3%	2.5%	4.2%	3.3%	5.1%	7.7%	4.5%	3.0%	9.4%	8.2%	5.0%	0.8%	6.9%	
Apollo	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	2.4%	0.0%	0.7%	0.0%	0.0%	0.9%	8.7%	0.5%	0.0%	0.0%	2.6%	0.0%	0.0%	
Ares	5.6%	0.3%	7.9%	0.0%	11.9%	2.0%	5.1%	2.2%	0.6%	1.0%	6.0%	0.3%	3.1%	3.1%	6.9%	2.1%	6.5%	8.6%	5.4%	2.2%	7.6%	4.1%	9.4%	1.6%	5.0%	1.3%	0.0%	8.2%	
Audax	0.9%	0.0%	4.9%	0.0%	11.9%	1.5%	1.9%	0.6%	0.5%	2.3%	8.5%	3.9%	4.2%	2.6%	0.9%	0.8%	4.2%	7.6%	0.2%	2.8%	3.4%	0.5%	14.3%	0.4%	3.7%	3.6%	0.0%	3.2%	
Bain	1.9%	0.0%	5.9%	0.0%	2.0%	1.5%	2.2%	0.0%	0.0%	0.0%	2.7%	0.0%	4.0%	1.6%	3.1%	0.0%	0.0%	0.9%	0.0%	0.0%	0.5%	0.3%	0.6%	2.9%	3.4%	1.6%	0.0%	3.6%	
Barings	1.4%	0.1%	10.1%	0.1%	5.1%	1.9%	2.2%	5.7%	1.5%	2.9%	10.8%	0.4%	5.7%	1.1%	0.7%	1.8%	1.9%	2.3%	1.8%	3.0%	2.5%	5.5%	4.7%	6.8%	1.5%	2.9%	1.5%	2.4%	
BMO	1.6%	2.2%	7.7%	0.0%	2.2%	0.6%	0.0%	5.7%	1.1%	0.0%	1.8%	4.8%	1.8%	0.0%	0.5%	0.4%	1.3%	6.3%	0.0%	5.4%	3.3%	4.0%	0.8%	5.8%	0.9%	0.8%	1.2%	0.0%	
Brightwood	0.9%	0.0%	1.0%	0.0%	0.6%	0.5%	1.5%	1.1%	0.5%	1.1%	1.1%	0.0%	1.1%	1.4%	1.0%	0.0%	0.0%	4.2%	0.8%	0.0%	0.5%	1.4%	1.0%	0.0%	0.4%	1.8%	3.0%	3.1%	
Carlyle	3.8%	0.0%	2.8%	0.0%	1.0%	2.3%	0.0%	2.9%	0.0%	1.6%	1.6%	0.0%	3.4%	0.6%	0.6%	1.5%	2.6%	1.5%	5.5%	0.0%	2.2%	3.0%	1.7%	0.0%	4.7%	2.3%	4.6%	1.8%	
Churchill	2.1%	0.6%	13.0%	0.0%	6.0%	8.5%	2.7%	10.8%	1.8%	1.1%	1.6%	1.4%	1.4%	6.0%	0.5%	4.5%	1.9%	2.3%	6.1%	0.6%	5.3%	6.8%	4.7%	8.5%	3.1%	3.5%	2.4%	0.0%	6.1%
Deerpath	1.2%	0.0%	1.4%	0.0%	0.3%	3.9%	0.0%	0.4%	4.8%	0.0%	0.0%	1.4%	1.0%	0.4%	0.1%	0.5%	0.0%	2.5%	0.0%	0.0%	1.0%	0.0%	1.5%	1.2%	0.8%	1.8%	0.0%	0.0%	
First Eagle/NewStar	0.0%	1.2%	7.0%	2.3%	3.1%	4.2%	4.0%	5.7%	1.8%	1.1%	6.0%	1.0%	3.5%	1.3%	4.5%	4.7%	6.3%	0.5%	3.0%	6.4%	5.9%	5.1%	4.4%	0.7%	7.0%	0.0%	5.3%		
Fortress	2.3%	0.0%	1.6%	0.0%	3.1%	2.6%	1.6%	1.1%	0.0%	1.4%	0.6%	0.5%	0.4%	3.5%	1.2%	0.1%	2.1%	3.8%	0.4%	0.0%	0.0%	1.7%	1.0%	1.4%	3.7%	1.1%	6.9%	3.5%	
Golub	5.9%	0.0%	7.4%	0.0%	6.9%	0.9%	3.1%	0.7%	0.5%	1.0%	4.5%	0.1%	1.3%	1.2%	0.1%	0.1%	1.7%	3.6%	5.8%	0.7%	4.2%	1.2%	0.3%	2.3%	5.8%	0.6%	0.1%	6.5%	
GSO/Blackstone	0.3%	0.7%	0.3%	2.4%	2.1%	0.8%	0.0%	1.8%	0.4%	0.0%	1.9%	0.5%	4.5%	0.1%	0.1%	0.3%	0.3%	2.2%	0.0%	1.8%	0.6%	2.0%	0.6%	0.5%	0.0%	1.6%	0.0%	0.0%	
Guggenheim	1.3%	0.0%	2.5%	0.0%	6.5%	4.2%	0.0%	1.9%	1.3%	0.0%	2.3%	0.0%	4.7%	2.1%	1.7%	0.3%	0.3%	4.0%	2.5%	2.5%	0.0%	1.7%	6.2%	0.0%	4.9%	1.9%	1.9%	7.3%	
KCAP/Garrison	4.9%	1.8%	4.2%	0.7%	8.6%	7.6%	0.9%	2.3%	6.3%	4.2%	6.1%	2.5%	6.3%	3.8%	3.6%	2.2%	4.0%	0.0%	0.0%	1.6%	0.8%	5.5%	5.7%	1.6%	0.7%	6.2%	1.0%	4.2%	
KKR	2.4%	0.0%	3.3%	0.0%	5.4%	0.2%	0.0%	1.8%	0.0%	0.8%	0.6%	0.0%	0.5%	0.4%	5.8%	0.0%	2.5%	0.0%	0.6%	0.6%	1.6%	1.1%	2.8%	2.2%	1.4%	3.6%	0.0%	6.4%	
Maranon	1.6%	1.3%	5.1%	0.0%	2.2%	2.8%	0.0%	3.0%	5.4%	0.0%	5.3%	0.0%	3.0%	0.0%	0.7%	1.8%	2.5%	1.6%	0.6%	0.6%	4.9%	3.2%	0.4%	4.7%	0.8%	1.8%	1.3%	5.2%	
MCF/Madison	3.5%	0.3%	7.7%	0.9%	7.6%	3.4%	0.5%	2.5%	3.3%	0.5%	6.8%	1.0%	6.4%	0.0%	4.2%	0.6%	0.0%	0.8%	1.1%	4.9%	7.4%	7.4%	1.5%	7.4%	2.1%	3.1%	0.6%	3.0%	
Midcap	5.1%	3.1%	4.5%	8.7%	4.1%	0.5%	0.3%	5.5%	4.0%	1.4%	4.7%	0.0%	5.9%	1.7%	1.2%	2.0%	1.7%	5.5%	2.8%	3.2%	7.4%	3.3%	3.4%	1.1%	3.3%	5.0%	0.0%	3.4%	
Monroe	1.3%	0.0%	3.0%	0.5%	9.4%	14.3%	0.6%	4.7%	0.8%	1.0%	8.5%	1.5%	5.1%	1.0%	0.3%	0.6%	6.2%	5.7%	2.2%	0.4%	1.5%	3.3%	3.3%	1.1%	1.7%	2.2%	1.1%	7.3%	
NXT Capital	2.8%	0.3%	9.4%	0.0%	1.6%	0.4%	2.9%	6.8%	5.8%	0.0%	3.1%	1.2%	4.4%	1.4%	2.3%	0.5%	0.0%	1.6%	1.4%	4.7%	7.4%	3.4%	1.1%	3.3%	3.3%	5.0%	0.0%	2.5%	
Owl Rock	3.1%	0.0%	8.2%	0.0%	5.0%	3.7%	3.4%	1.5%	0.9%	0.4%	4.7%	3.5%	0.8%	0.7%	3.7%	5.8%	0.0%	4.9%	0.7%	3.6%	0.8%	2.1%	0.1%	1.7%	3.3%	3.7%	0.0%	6.0%	
Pennantpark	1.6%	0.2%	5.0%	2.6%	1.3%	3.6%	1.6%	2.9%	0.8%	1.8%	2.4%	1.8%	7.0%	1.1%	0.6%	1.6%	1.9%	6.2%	0.0%	1.8%	3.1%	2.8%	2.2%	5.0%	3.7%	1.9%	4.9%		
Silver Rock	2.3%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	1.5%	1.2%	3.0%	4.6%	0.0%	0.0%	6.9%	0.1%	0.0%	1.9%	1.0%	0.0%	1.3%	0.6%	0.0%	1.1%	0.0%	0.0%	1.9%	6.3%		
Tennenbaum/Blackrock	4.2%	0.0%	6.9%	0.0%	8.2%	3.2%	3.6%	2.4%	0.0%	3.1%	1.8%	6.1%	0.0%	5.3%	3.5%	6.5%	0.0%	7.3%	4.2%	6.4%	5.2%	3.0%	3.4%	7.3%	2.5%	6.0%	4.9%	6.3%	

Source: S&P Global Ratings.

Middle-Market CLOs | Q4 2022 Middle-Market Manager Metrics

Manager	Largest GIC Industry	Largest GICS industry (%)	No. of GICS Industries	Largest issuer exposure (%)	No. of issuers	DG:UG ratio in Q4 2022(ii)	Credit estimated issuers (%)	SPWARF(ii)	WAS (%)	WAM	% of MM CLO assets unique to manager	Manager with largest overlap	Proportion overlap (%)
Alliance Bernstein	Software	31.04	26	1.95	134	5:1	86.62	3897	5.65	3.96	48.01%	Golub	5.90
Angelo Gordon/Twin Brook	Healthcare providers and services	18.53	28	2.13	75	4:0	91.69	3848	5.78	2.62	79.29%	Midcap	3.09
Antares	Healthcare providers and services	11.27	44	0.86	283	8:6	88.28	3734	5.14	3.47	30.71%	Churchill	12.98
Apollo	Professional Services	13.18	15	5.50	25	0:0	85.73	3874	5.49	4.46	18.12%	Midcap	8.73
Ares	Software	15.41	39	2.04	210	5:2	58.02	3660	5.19	3.76	21.68%	Audax	11.92
Audax	Software	17.68	40	1.09	246	3:3	13.23	3543	4.40	4.39	2.80%	Monroe	14.28
Bain	Professional Services	12.78	25	3.29	42	0:0	91.91	3855	6.09	3.89	38.70%	Antares	5.86
Barings	Software	17.09	39	2.46	137	3:2	81.78	3665	5.24	3.86	33.40%	Churchill	10.82
BMO	Healthcare providers and services	16.20	40	1.71	160	1:1	85.74	3917	5.07	3.32	50.43%	Antares	7.68
Brightwood	Commercial services and supplies	21.77	26	5.26	61	0:1	81.96	3572	6.37	3.41	63.23%	KCAP/Garrison	4.20
Carlyle	Commercial services and supplies	9.72	24	5.05	60	0:0	80.15	3965	6.17	3.95	30.21%	KKR	5.48
Churchill	Healthcare providers and services	8.70	42	1.49	186	2:1	76.18	3744	5.11	3.99	22.61%	Antares	12.98
Deerpath	Healthcare providers and services	23.14	40	2.21	145	3:1	82.47	3771	5.59	3.29	69.86%	BMO	4.81
First Eagle/NewStar	Healthcare providers and services	14.43	48	2.34	172	10:6	68.09	3762	5.58	3.64	25.57%	Pennantpark	7.02
Fortress	Hotels, restaurants, and leisure	14.11	41	4.03	134	3:3	67.86	3698	6.59	3.72	53.93%	Silver Rock	6.92
Golub	Software	24.00	45	1.59	258	6:4	89.54	3856	5.60	3.80	53.82%	Antares	7.39
GSO/Blackstone	Hotels, restaurants, and leisure	16.91	21	9.03	33	2:0	49.41	3763	5.24	2.57	5.61%	First Eagle/NewStar	4.54
Guggenheim	Software	12.51	41	3.32	126	5:3	50.10	3910	5.13	4.16	20.31%	Tennenbaum/Blackrock	7.34
KCAP/Garrison	Software	17.91	43	2.50	131	6:4	49.56	3810	5.57	3.77	15.22%	Ares	8.62
KKR	Healthcare providers and services	12.56	23	3.26	52	1:0	74.55	4063	6.16	4.31	43.50%	Tennenbaum/Blackrock	6.36
Maranon	Commercial services and supplies	8.53	32	2.29	107	6:1	91.42	3791	5.52	3.39	52.17%	BMO	5.37
MCF/Madison	Healthcare providers and services	10.91	42	1.71	196	3:1	87.37	3800	5.55	3.61	35.85%	Antares	7.67
Midcap	Healthcare providers and services	9.04	46	1.71	207	6:6	90.24	3830	5.66	3.64	39.80%	Apollo	8.73
Monroe	Software	15.71	37	1.25	128	9:0	35.32	3518	4.84	4.56	17.01%	Audax	14.28
NXT Capital	Healthcare providers and services	14.12	31	2.15	104	1:0	91.68	3869	5.23	3.33	35.33%	Antares	9.42
Owl Rock	Software	22.85	37	3.88	141	5:1	81.55	3770	5.81	4.05	19.67%	Antares	8.19
Pennantpark	Media	10.86	35	2.13	109	2:1	82.00	3783	5.81	3.43	45.04%	First Eagle/NewStar	7.02
Silver Rock	Commercial Services and supplies	10.97	32	3.14	45	3:1	51.66	3873	6.82	3.85	31.47%	Fortress	6.92
Tennenbaum/Blackrock	Software	25.64	43	1.63	167	5:1	75.56	3744	5.68	4.22	26.77%	Ares	8.22

(i)Based on third-quarter 2022 exposure to companies with ratings/credit estimates raised & lowered in Q4 2022. Includes both rated obligors and credit estimated obligors. (ii)Assets without credit estimate (or other derived S&P Global Ratings' 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. Source: S&P Global Ratings.

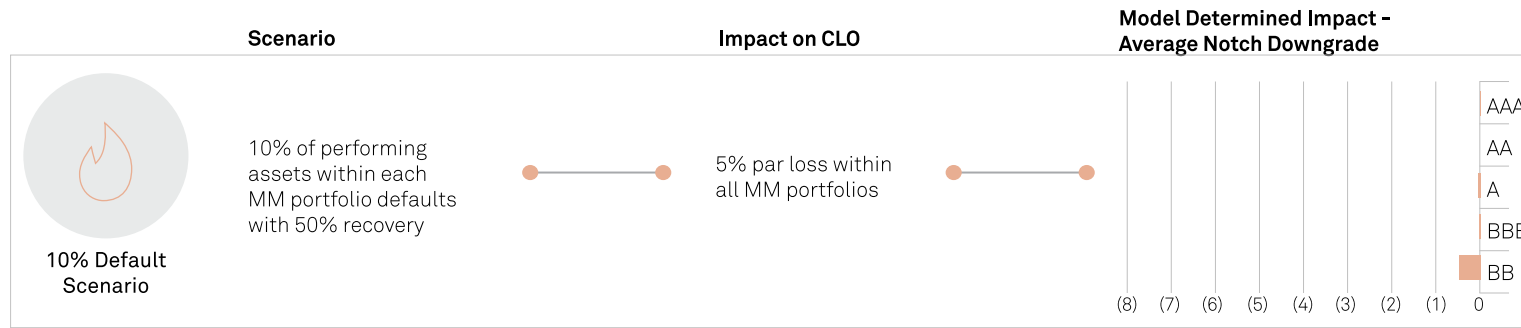
Middle-Market CLOs | Top 30 Obligators Held By More Than Two Managers

#	Company	Manager count	Total par (\$)	GICS Industry
1	DRILLING INFO, INC.	9	316,652,699.90	Software
2	ImageFirst Holdings LLC	8	65,995,338.35	Commercial Services and Supplies
3	RSC INSURANCE BROKERAGE, INC	7	435,033,198.97	Insurance
4	Edgewood Partners Holdings, LLC	7	339,407,752.64	Insurance
5	ALERA GROUP HOLDINGS, INC.	7	287,934,890.68	Insurance
6	Jensen Hughes Inc.	7	84,623,213.80	Construction and Engineering
7	INTEGRITY MARKETING ACQUISITION, LLC	6	288,985,614.37	Insurance
8	ALPINE ACQUISITION CORP. II	6	158,156,174.90	Commercial Services and Supplies
9	WEG HOLDINGS, LLC	6	155,289,830.56	Capital Markets
10	CM GROUP LTD.	6	138,500,639.94	IT Services
11	ARCH GLOBAL PRECISION, LLC	6	129,772,565.84	Machinery
12	HIG Holdings, Inc.	6	119,130,301.80	Insurance
13	KNEL Acquisition LLC	6	114,157,433.07	Personal Products
14	OMNI PARENT, LLC	6	112,227,847.56	Transportation Infrastructure
15	Symplr Software Intermediate Holdings Inc.	6	75,796,703.90	Health Care Technology
16	AMS Intermediate Holdings LLC	6	74,396,442.24	Diversified Consumer Services
17	Output Services Group Inc.	6	63,390,511.76	IT Services
18	Ta TT Buyer LLC	6	52,585,837.59	Technology Hardware, Storage and Peripherals
19	PEACH STATE LABS, LLC	6	31,346,516.70	Chemicals
20	DILIGENT CORPORATION	5	307,415,898.68	Software
21	OHIO TRANSMISSION CORPORATION	5	191,395,038.67	Trading Companies and Distributors
22	MRI Intermediate Holdings LLC	5	191,384,425.10	Software
23	AWP HOLDING COMPANY	5	146,246,222.69	Commercial Services and Supplies
24	RHODE HOLDINGS INC.	5	146,143,843.24	Software
25	PC FOY HOLDINGS, LLC	5	154,202,391.69	Insurance
26	TL LIGHTING HOLDINGS, LLC	5	135,157,030.51	Auto Components
27	ECMI HOLDINGS, LLC	5	126,673,423.66	Construction Materials
28	PROCARE SOFTWARE HOLDINGS, LLC	5	119,969,977.59	Software
29	IG Investments Holdings LLC	5	157,007,655.15	IT Services
30	LONG'S DRUGS INCORPORATED	5	117,984,937.29	Food and Staples Retailing

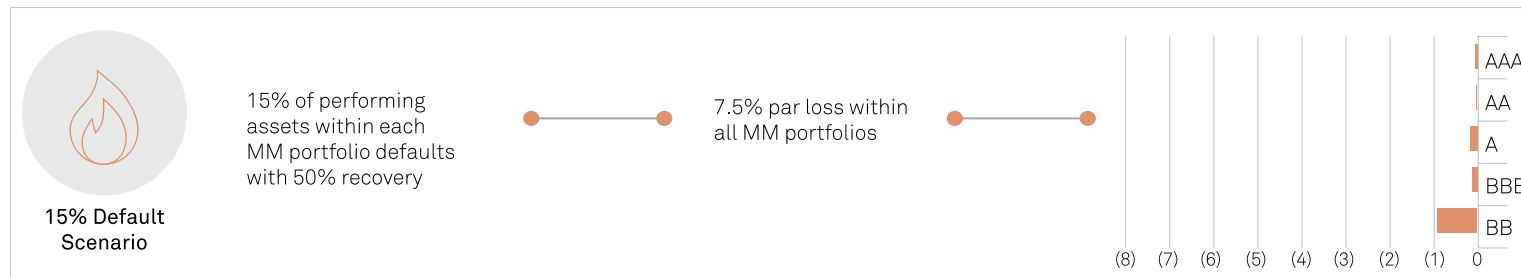
Source: S&P Global Ratings.

- There are about 1,600 issuers with loans in our rated middle-market CLO transactions, about the same number of obligors contained in our rated BSL CLOs.
- Compared to the obligors in BSL CLOs, there is far less overlap in middle-market CLOs; for example, the most widely held obligor in BSL CLOs is held by nearly every CLO manager, while the top obligor in middle-market CLOs is held by just nine managers.
- The list of obligors on this slide is based off the most recent trustee reports we have received for middle-market CLOs and represents the top 30 obligors held by multiple managers.
- The par amount given in the table is the total exposure across S&P Global Ratings-rated middle-market CLOs.
- Several of the most widely names have changed since the end of third-quarter 2022.

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



CLO tranche rating	0	-1	-2	-3	-4	-5	-6	-7 or more	WA notches	Spec.-grade	'CCC' category	Below 'CCC-'
AAA	98.1%	1.9%							0.02			
AA	100.0%								0.00			
A	95.1%	4.9%							0.05			
BBB	95.6%	4.4%							0.04	4.4%		
BB	88.9%	2.8%		2.8%				5.6%	0.50	100.0%		5.6%

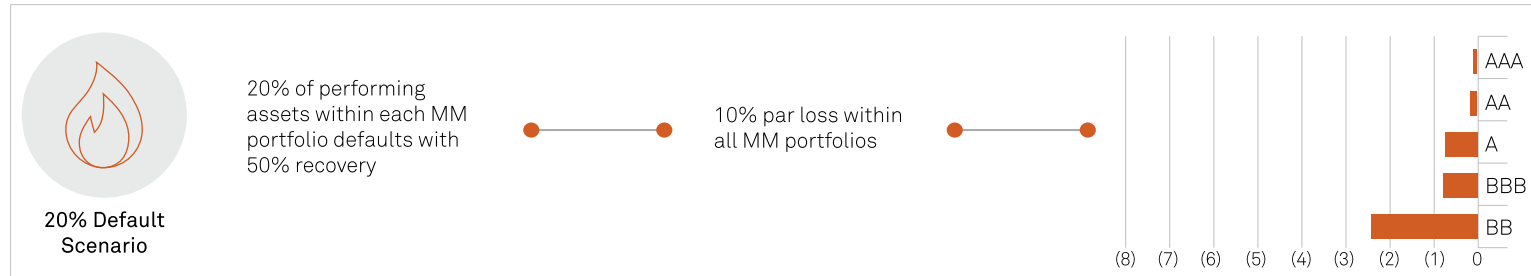


CLO tranche rating	0	-1	-2	-3	-4	-5	-6	-7 or more	WA notches	Spec.-grade	'CCC' category	Below 'CCC-'
AAA	95.0%	5.0%							0.05			
AA	98.0%	2.0%							0.02			
A	88.9%	6.2%	4.9%						0.16			
BBB	91.2%	7.4%		1.5%					0.12	5.9%		
BB	66.7%	16.7%	5.6%		2.8%			8.3%	0.97	100.0%	2.8%	8.3%

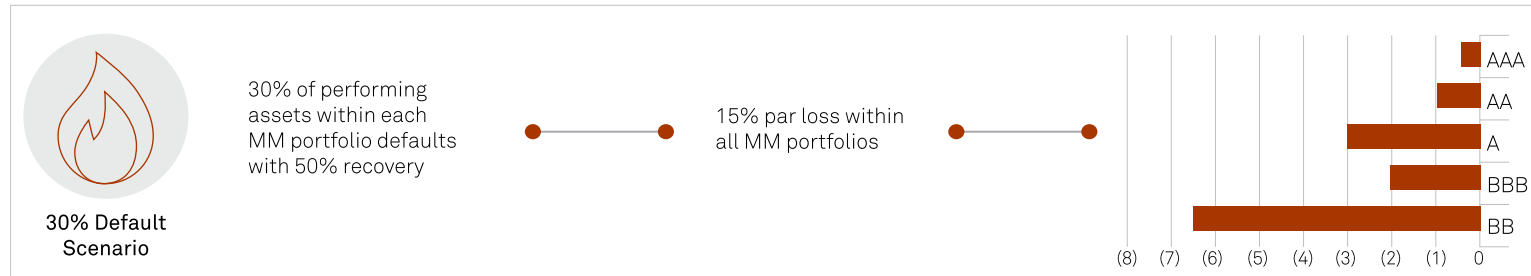
WA--Weighted average. Source: S&P Global Ratings.

- We applied a series of five hypothetical stress scenarios to a sample of 65 of our rated middle-market CLO transactions still within their reinvestment periods, generating quantitative analysis for each one using our CLO rating models (CDO Evaluator and S&P Cash Flow Evaluator).
- The first four scenarios feature increasing levels of collateral default stress, while the fifth scenario assumes that all 'ccc' category obligors default with a 50% recovery and all 'b-' obligors are lowered to a rating of 'ccc+'.
- The stress scenarios show 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?



CLO tranche rating	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	-7 or more (%)	WA notches	Spec.-grade (%)	'CCC' category (%)	Below 'CCC-' (%)
AAA	90.6	9.4							0.09			
AA	89.1	6.9	4.0						0.15			
A	53.1	27.2	16.0	1.2	2.5				0.73	1.2		
BBB	36.8	54.4	5.9		2.9				0.78	57.4		
BB	16.7	27.8	19.4	8.3	11.1	5.6		11.1	2.42	100.0	11.1	11.1

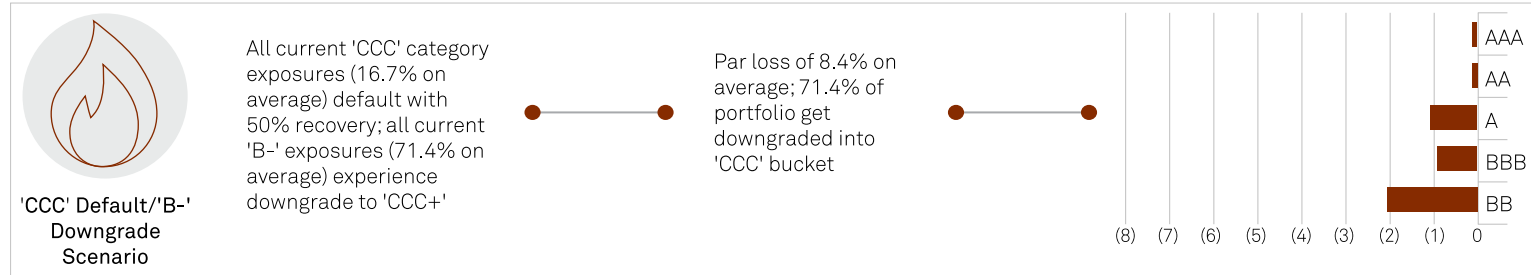


CLO tranche rating	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	-7 or more (%)	WA notches	Spec.-grade (%)	'CCC' category (%)	Below 'CCC-' (%)
AAA	57.5	40.6	1.9						0.44			
AA	41.6	28.7	23.8	1.0	5.0				0.99			
A	2.5	6.2	25.9	27.2	25.9	12.3			3.05	17.3		
BBB	2.9	51.5	20.6	11.8	7.4	1.5		4.4	2.06	97.1	1.5	2.9
BB		8.3			2.8	2.8		86.1	6.56	100.0	5.6	86.1

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, more than 98% of the CLO 'AAA' ratings either remain 'AAA' or are downgraded one notch to 'AA+' and none are lowered by more than two notches (i.e., below 'AA').
- 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), the average MM CLO 'BBB' tranche rating was lowered by slightly more than two notches, 1.5% of the CLO ratings were lowered into the 'CCC' range, and 2.9% of the CLO tranches defaulted.

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



CLO tranche rating	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	-7 or more (%)	WA notches	Spec.-grade (%)	'CCC' category (%)	Below 'CCC-' (%)
AAA	88.8	11.3							0.11			
AA	92.1	4.0	4.0						0.12			
A	43.2	19.8	29.6	3.7	2.5	1.2			1.06	1.2		
BBB	30.9	55.9	7.4	4.4	1.5				0.90	69.1		
BB	36.1	22.2	13.9	5.6	5.6			16.7	2.06	100.0	5.6	16.7

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

- In contrast to the four previous scenarios, each of which envisioned a set proportion of CLO collateral defaulting, our fifth scenario starts with the credit estimates.
- In this scenario, we assume that every company with a credit estimate in the 'ccc' range experiences a default, and every company with a credit estimate of 'b-' is lowered to 'ccc+'.
- This led to an assumed 16.7% of MM CLO collateral defaulting, and another 71.4% being lowered to a credit estimate of 'ccc+' from 'b-'.
- As with the other scenarios, the senior CLO tranche ratings showed only modest movement under this stress, with the impact increasing on lower-rated CLO tranches.

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