S&P Global Ratings

U.S. BSL CLO And Leveraged Finance Update: Elevated Rates Expected To Keep Pressure On Low-Rated Corporates And Some Speculative-Grade CLO Tranches

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This report does not constitute a rating action.

U.S. Leveraged Finance Key Credit Themes

We expect broad dispersion in credit performance in our low-growth macro environment base case.

- ‘B+’ and higher-rated issuers are better positioned to deal with higher rates and slowing growth.
- ‘B’ rated issuers generally have more resilient credit measures than 'B-' rated issuers.
- Reductions in capital expenditures (capex) and working capital have supported cash flow; however, the ability to squeeze working capital is limited, and reduced capex may slow future growth.
- Profit margins have held up well, but could be pressured if revenue growth continues to fall or turns negative.
- Many issuers have chipped away at debt maturities, especially better-performing speculative-grade firms.

‘B-’ and lower issuers are susceptible to downgrades as maturity headroom narrows and interest rates remain high.

- About a quarter of our ‘B-’ issuers and just less than half of our ‘CCC’ category-rated issuers fail to cover their interest expense with EBITDA.
- Furthermore, we could see interest coverage fall another 0.25x-0.50x from second-quarter 2023 from the lagged effects of the sharp increase in SOFR.
- The ‘CCC’ category could grow another 200-400 basis points over the next 12 months from about 13% at August 2023.

The default cycle has started, with spec-grade defaults expected to increase to 4.5% at June 2024, and they may remain under pressure thereafter.

- In our downside case, defaults could rise to 6.25% versus the long-term historical average of 4.1%. The current speculative-grade (SG) default rate is 4.07% (preliminary as of Sept. 30, 2023).
- Morningstar-LSTA U.S. Leveraged Loan Index (LLI) default forecast: base-case of 2.75%, which is slightly higher than the historical average of 2.5%. This excludes selective defaults even when lenders take a par loss. The LL Index default rate is 1.76% (by issuer count as of Oct. 31, 2023).

Estimated average future recoveries on first-lien debt have declined steadily over time, especially for low speculative-grade issuers.

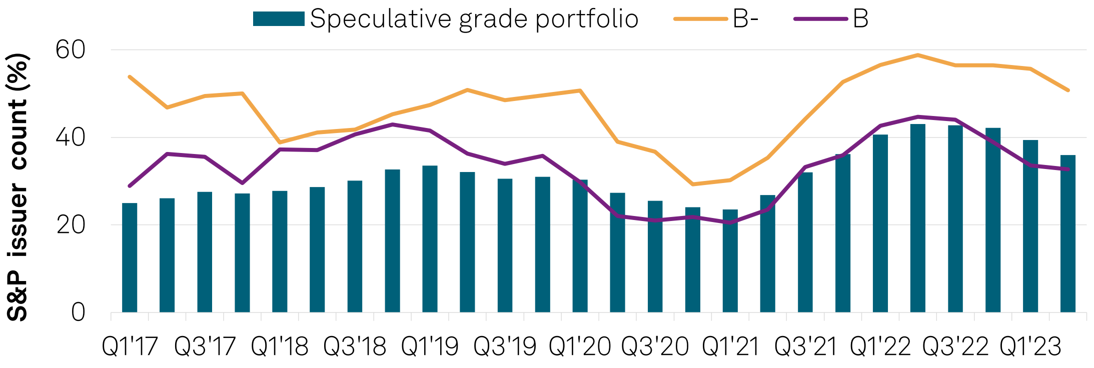
- Our average expectation for future first-lien recoveries is 64%, well below the long-term historical average of 75%-80%.
- Average recovery expectations for first-lien debt of issuers rated 'B', 'B-', and the 'CCC' category are lower still at 61%, 59%, and 58%, respectively.
- Further, out-of-court restructurings will likely push many first-lien recoveries lower and increase dispersion.

U.S. BSL CLO Key Credit Themes

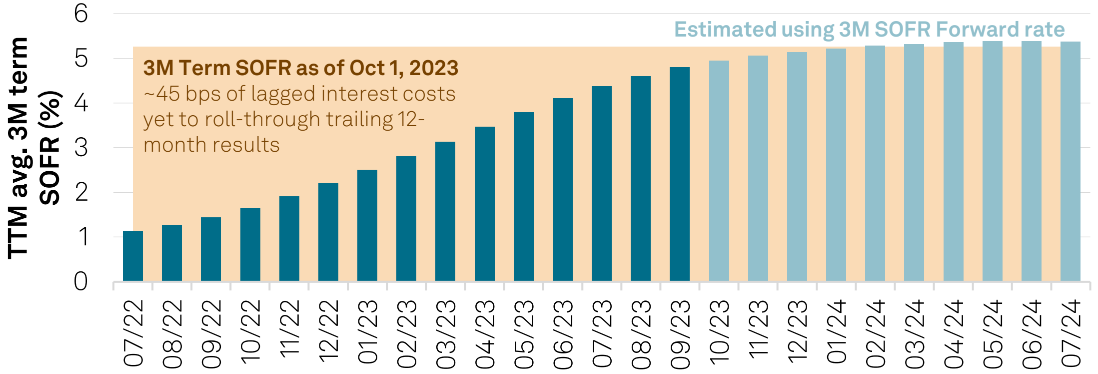
- Downgrades of corporate ratings in U.S. broadly syndicated loan (BSL) collateralized loan obligation (CLO) collateral pools continue to outnumber upgrades, but the pace has moderated in recent months. Third-quarter 2023 saw 85 downgrades of CLO obligors, versus 108 in second-quarter 2023, and there were also far fewer downgrades into the 'CCC' range: 15 companies in third-quarter 2023 versus 35 in second-quarter 2023 (see slide 29).
- After peaking in late April at more than 31%, the proportion of BSL CLO assets from 'B-' obligors has fallen, leveling off at around 28.5% (slides 25 and 26). In an average year, 22% of 'B-' companies see their rating lowered into the 'CCC' range or lower (see slide 17), so the reduction in 'B-' assets is a modest credit positive. Further, history shows that companies rated 'B-' from day one are less likely to see a downgrade than companies that get to 'B-' by way of downgrade from a higher rating. About 63% of loans from 'B-' companies in BSL CLOs today (by par value) were rated 'B-' from day one (see slide 27).
- CLO managers continue to 'de-risk' their portfolios in anticipation of an economic slowdown and corporate rating downgrades. Since the start of 2023, the credit quality of assets purchased by BSL CLOs has been notably higher (lower S&P Global Ratings' weighted average rating factor [SPWARF]) than the credit quality of the assets sold. The proportion of asset sales from companies with 'B-' and 'CCC' category or lower ratings are greater than the proportion of purchases from these rating categories, further evidence of managers' attempts at de-risking. This comes at a modest cost, though, as, on average, each sale incurs a modest par loss (see slide 34).
- We separated BSL CLO managers into three cohorts based on the par amount of CLOs they've issued since 2020, and then looked at the exposure each group had to corporate downgrades during third-quarter 2023 (see slide 31). We found that the CLO managers in the high issuance cohort tended to have portfolios with less exposure to corporate ratings downgrades during the quarter, largely because these portfolios consisted of loans from large, more widely held companies.
- The BSL loan market continues to make progress on the maturity wall (see slide 11). Within CLO collateral pools, only 1.6% of loans have a maturity before the end of 2024. Another 8.9% of loans in BSL CLO collateral pools mature in 2025, with many of these nearer-term maturity loans coming from lower-rated obligors and having lower prices (see slide 35).
- Software companies are the largest industry sector (GICS category) in CLO collateral pools, at 11.58% of total assets. Healthcare providers and services is the second largest category, at 6.63% of assets, which grows to 12.43% of assets if combined with other healthcare-related categories. Of the loans from healthcare providers and services companies, 15.0% have a price lower than 80, far more than any other sector (see slide 37).
- Despite the steady drip of corporate rating downgrades, our outlook for CLO ratings remains stable, especially for more senior, higher-rated CLO tranches, given the structural protections built into CLOs and rating cushions for most tranches. We do expect some CLO tranche rating downgrades, but these should mostly be from subordinate tranches of amortizing CLOs originated prior to the 2020 pandemic.

U.S. Leveraged Finance | What We Are Watching In Fourth-Quarter 2023

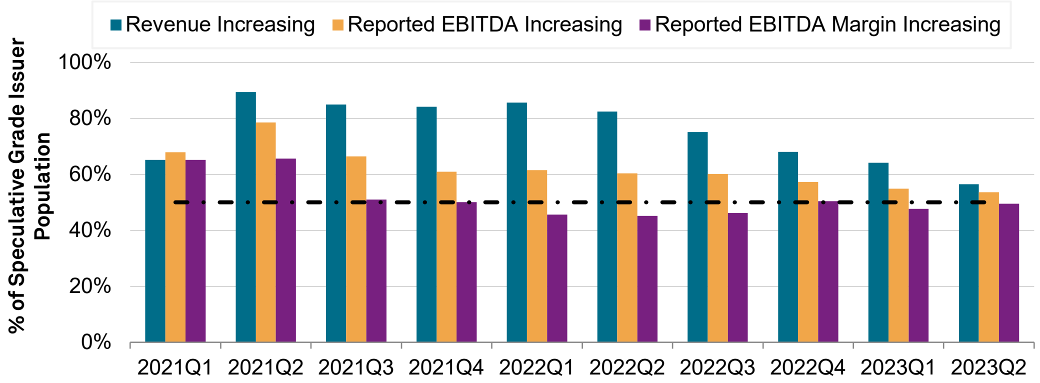
1. Persistence in the number of issuers burning cash (-FOCF)



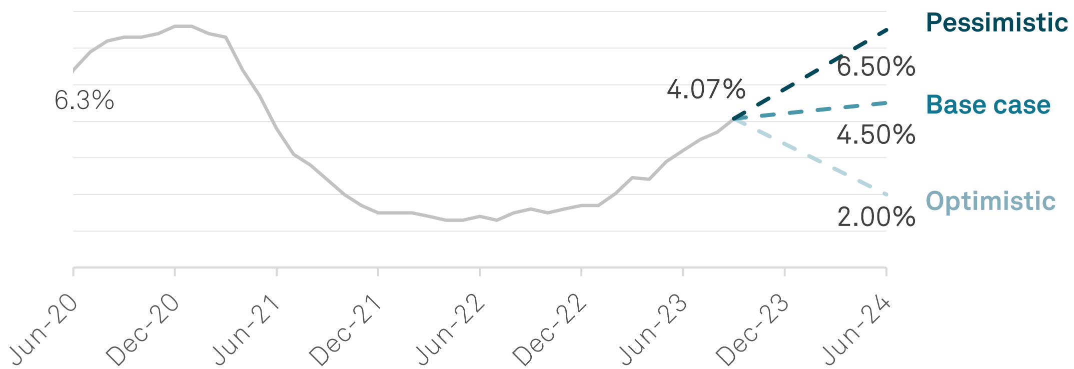
2. Lagged impact of higher benchmark rates not quite fully realized yet



3. The reversal of quarterly revenue and earnings growth*



4. Speculative-grade default rate expected to rise**



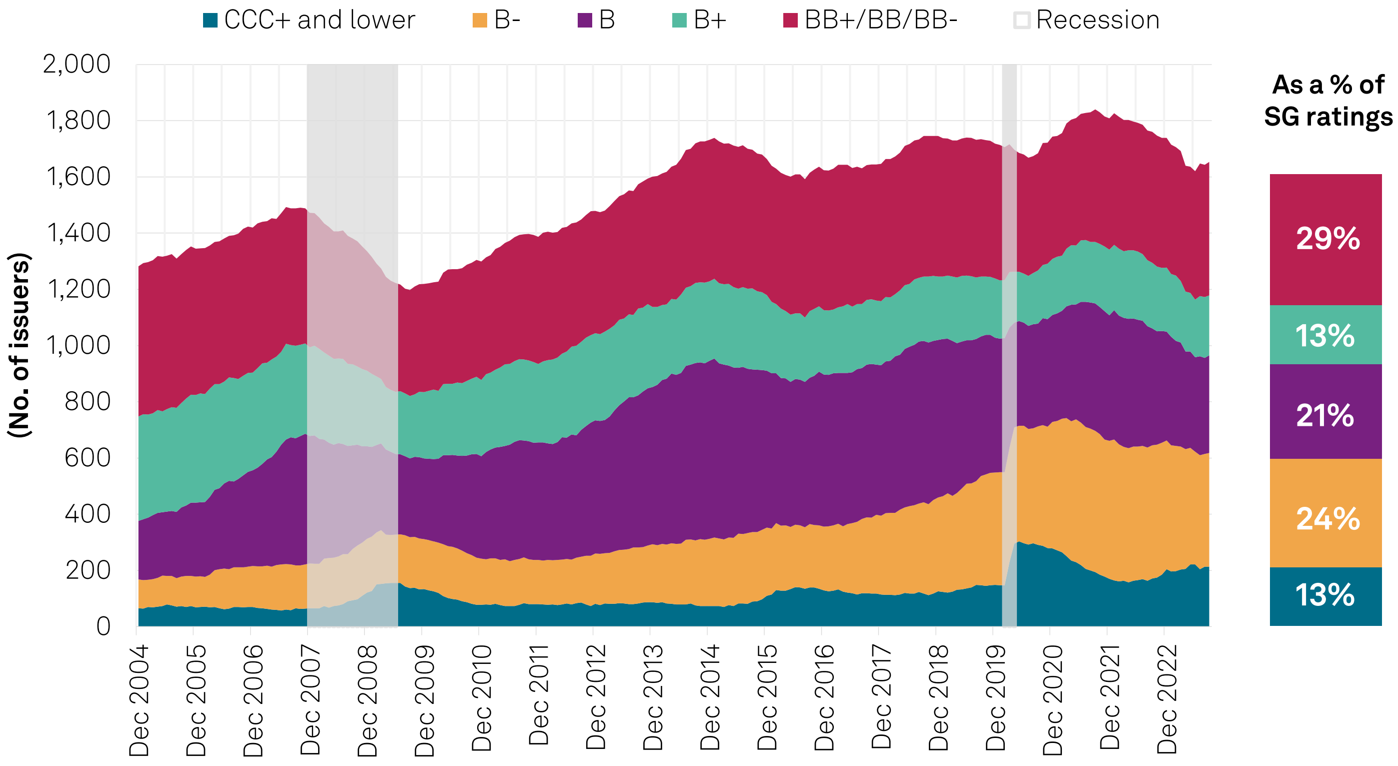
*Quarterly year-over-year (YoY) (e.g., Q2-2023 vs Q2-2022). Reflects the percentage of speculative-grade issuers in the quarter that have higher revenue, reported EBITDA, and reported EBITDA margins than the same quarter in the prior year.

**4.07% is a preliminary estimate as of Sept. 30, 2023.

U.S. Leveraged Finance | Ratings Growth At Bottom Rungs Means Ratings Are Concentrated At Low Levels; Lower-Rated Issuers Have High Downgrade Risk

U.S. and Canada speculative-grade ratings distribution by issuer count

As of Sept. 30, 2023



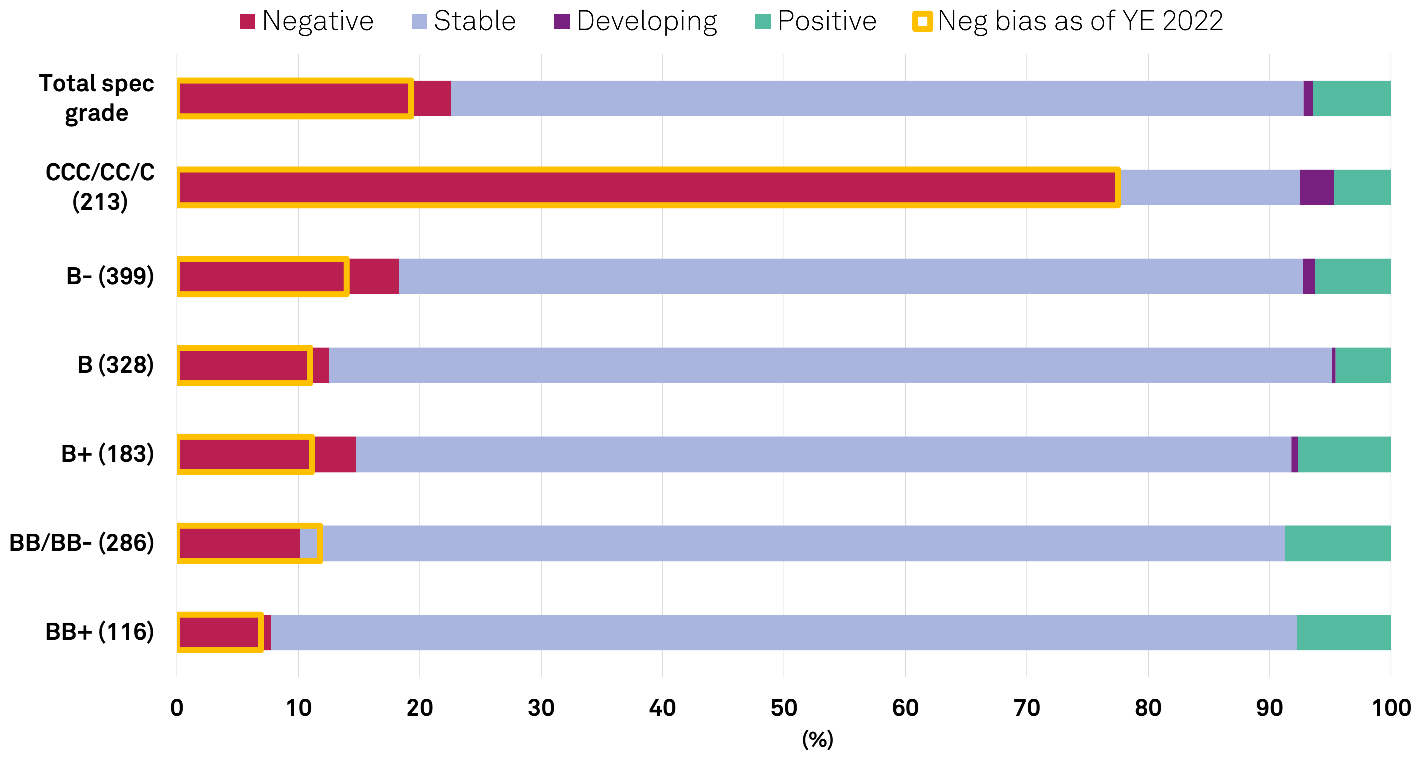
- About 58% of our speculative-grade issuer ratings (by issuer count) are concentrated at 'B' and lower.
- The percentage of issuers rated 'B' has declined about 1,600 bps from its high in 2014. The 'B-' percentage is down about 390 bps from its high in 2021. New issuance in 2023 has typically been 'B' rated or higher.
- Using the historical average of 'B' and 'B-' annual downgrade transition rates to the 'CCC' category, the proportion of 'CCC' category rated issuers is 15.0%-17.0%, which is below the COVID-19 peak of 18.7% but higher than the global financial crisis peak of 12.8%.

SG--Speculative grade. Source: S&P Global Ratings & CreditPro.

U.S. Leveraged Finance | Spec-Grade Negative Bias Continues to Increase, Especially At Lower Ratings; Overall Average Skewed By 'CCC' Category (77%)

Speculative-grade negative ratings bias

U.S. and Canadian nonfinancial corporates



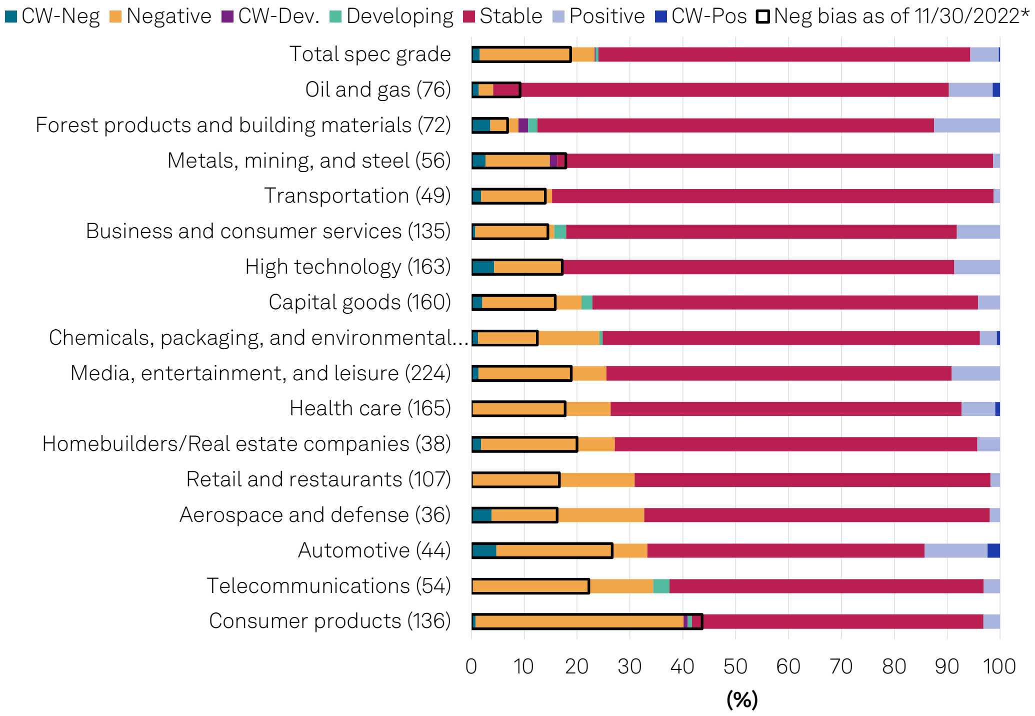
Data as of Oct. 16, 2023, Source: S&P Global Ratings Credit Research & Insights.

- The negative bias for speculative-grade corporates overall at 23% has increased from in March 2022, when it was about 19%.
- The overall speculative-grade negative bias is highly influenced by the higher concentration of 'CCC' category issuers with a negative outlook (about 77%).
- The speculative-grade negative bias sits just above the post-global financial crisis (GFC) average of roughly 20%. It is still below the long-term average from 1995 through March 2023.
- However, excluding 'CCC' category issuers, the negative bias falls to about 11.7%.
- Even so, continued pressure from slowing economic growth and the burden of sharply higher debt servicing costs may keep upward pressure on negative bias.

U.S. Leveraged Finance | Increased Negative Ratings Bias Highlights Growing Downgrade Risk

Speculative-grade rating outlook by sector

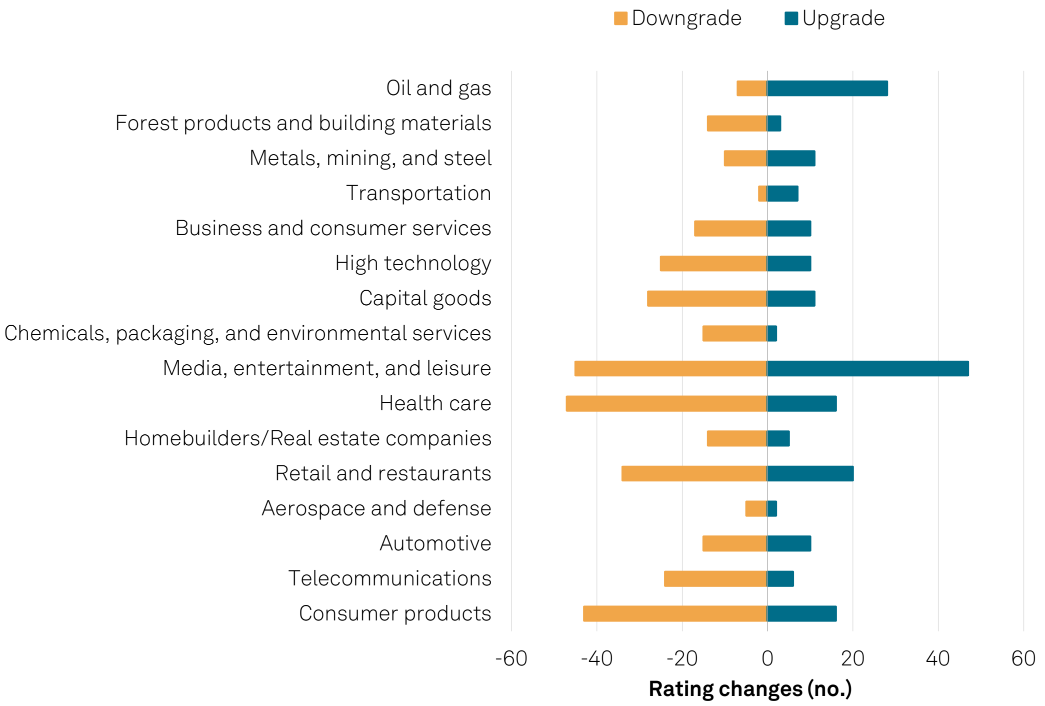
U.S. And Canada (as of Oct. 16, 2023)



*Includes issuers with a negative rating outlook and issuers placed on CreditWatch negative.
Source: S&P Global Ratings U.S. and Canada ratings.

Speculative-grade issuer credit rating changes by sector*

U.S. and Canada (last 12 months' Sept. 2023)



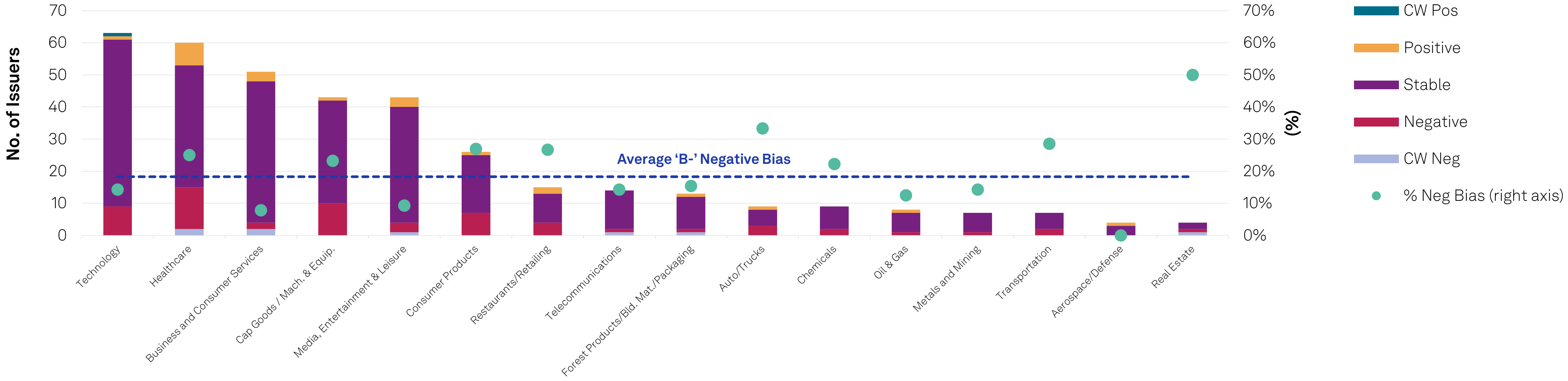
*Excludes utilities, financial, and insurance services. Source: S&P Global Ratings U.S. and Canada ratings.

U.S. Leveraged Finance | ‘B-’ Downgrade Risk Can Vary Widely By Sector

- On a speculative-grade corporate rating, an outlook negative is intended to signal a one-in-three chance of a downgrade within the next 12 months.
- Negative bias for companies rated ‘B-’ is 18.3%, modestly lower than the speculative-grade average of about 23.0%, but somewhat higher than all speculative-grade rating categories other than the ‘CCC’ category (see slide 6).
- Most ‘B-’ rated companies have a stable outlook, modestly lower at the start of the year.
- Of the seven sectors with an above-average negative outlook, the retail and restaurants and automotive sectors are notably higher than the average.

Ratings bias of companies rated ‘B-’ by sector

U.S. and Canadian nonfinancial corporates

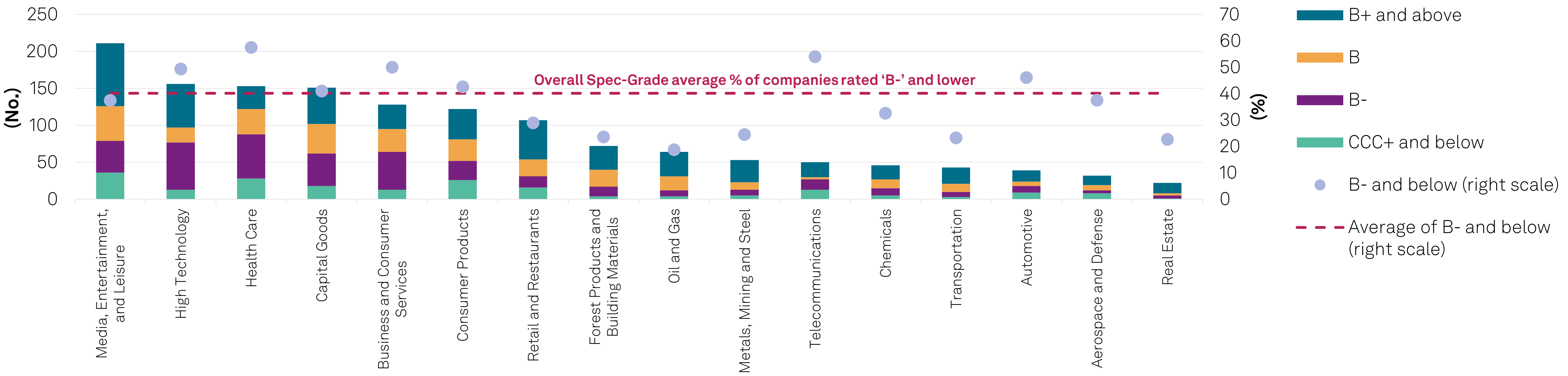


As of October 16, 2023. Source: S&P Global Ratings Credit Research & Insights.

U.S. Leveraged Finance | Credit Quality Varies By Sector, But The Largest Sectors Generally Have High Concentrations Of Firms Rated ‘B-’ Or Lower

- The sectors with the most speculative-grade companies tend to have high proportions of ratings of ‘B’ and lower, since this is where post-GFC ratings growth was concentrated.
- The sectors with the highest number of firms rated ‘B-’ and lower are health care; high technology; media, entertainment, and leisure; capital goods; business and consumer services; and consumer products.
- Of these six sectors, all but media, entertainment, and leisure have concentrations of companies rated ‘B-’ or lower that are above the speculative-grade average.

U.S. and Canada speculative-grade issuer credit rating distribution by sector

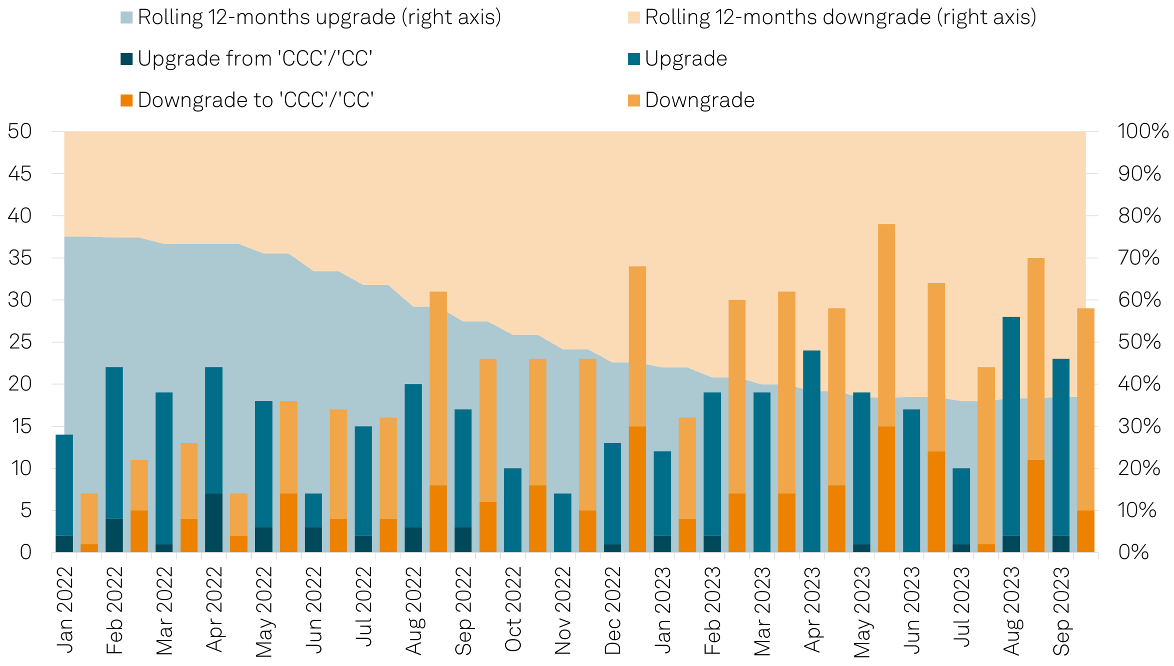


As of October 16, 2023. U.S. and Canada corporate ratings. Source: S&P Global Ratings.

U.S. Leveraged Finance | Credit Trends Turn Negative As Economic Tailwinds Flag And Headwinds Mount; Downgrades Mostly B- And Lower

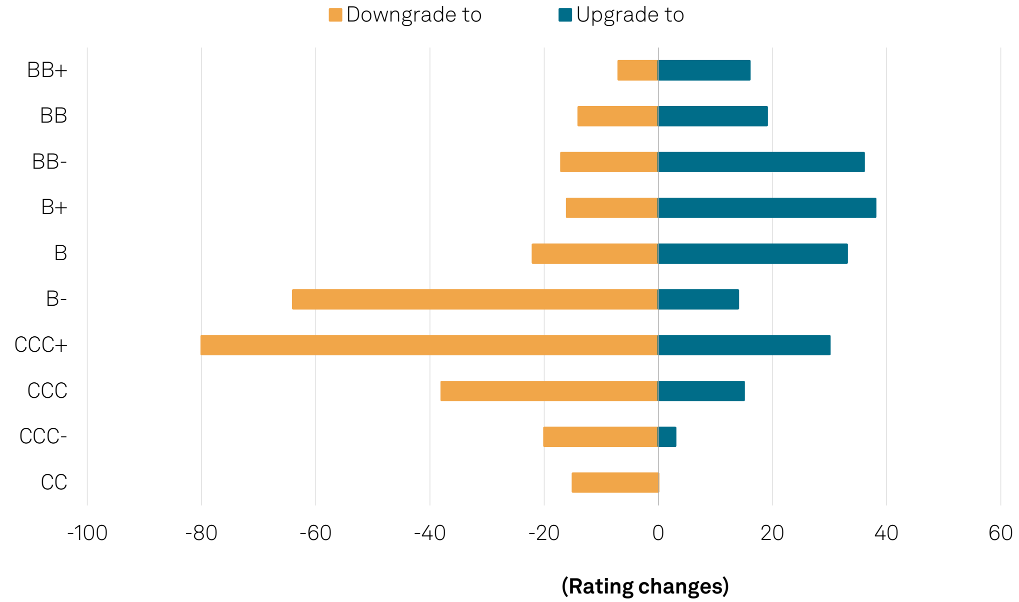
Credit statistics for entities downgraded to--or upgraded from--the 'CCC' category are starkly different than those where the issuer credit rating was unchanged.

Speculative-grade upgrades and downgrades



Statistics in the charts above excludes entities in the infrastructure and financial and insurance services sectors.
Source: S&P Global Ratings U.S. and Canada ratings.

Speculative-grade issuer credit rating changes by sector: U.S. And Canada (last 12 months' Sept. 2023)

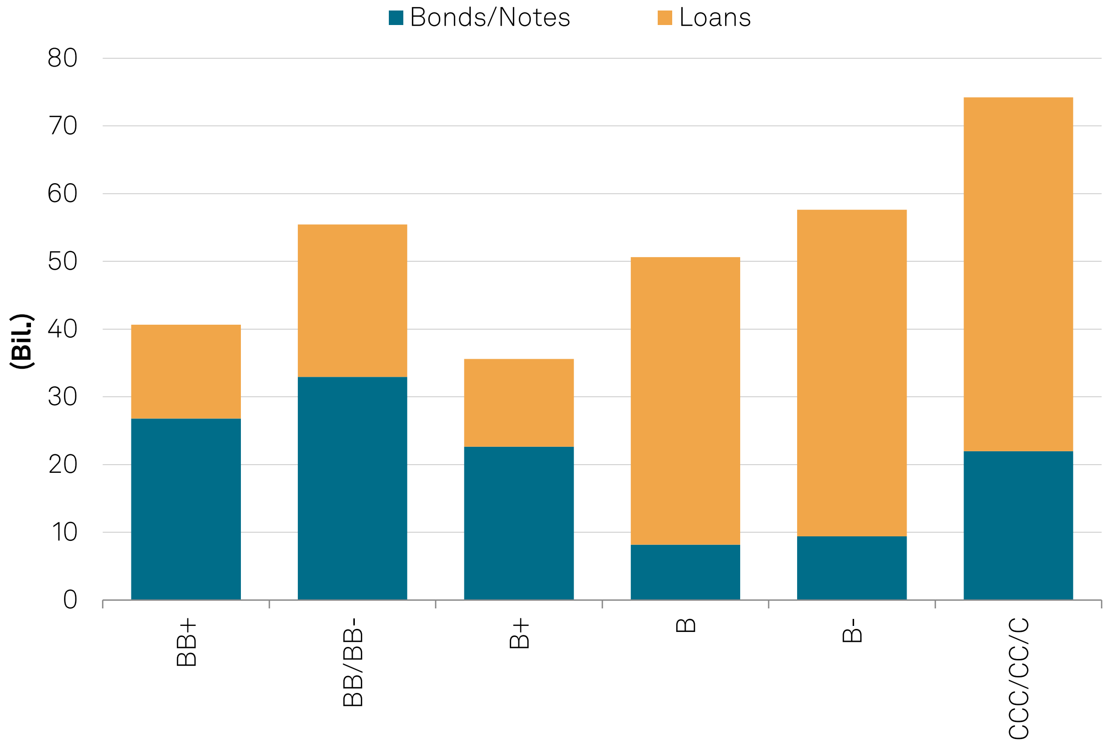


Note: Downgrade and upgrade ratings actions are 'to' the current rating.
Source: S&P Global Ratings U.S. and Canada ratings.

S&P Global Ratings

U.S. Leveraged Finance | Issuers Chip Away At Near-Term Maturities; Refinancing Risk Is A Credit Focus, Especially For Lower-Rated Firms

U.S. speculative-grade maturities (2025 and before)



Source: IHS Markit and Reuters. Data as of Oct. 17, 2023.

Companies reduced near-term LSTA LLI maturities

Near-term maturities at year-end 2022 and current status (bil. $)

	Due in 2023	Due in 2024	Due in 2025
Totals as of year-end 2022	**7.5**	**74.9**	**198.7**
Where are we now? Status as of Aug. 15, 2023			
Still outstanding	2.8	26.9	139.3
Refinanced	1.0	37.2	35.3
Repaid (excl. refinancing)	1.6	3.6	4.8
Amend-and-extend	0.0	4.0	16.5
Defaulted or restructured	2.1	2.5	2.8
Other*	0.0	0.6	0.0

Sources: PitchBook | LCD; Morningstar LSTA Leveraged Loan Index. Data through Aug. 15, 2023. *No longer tracked by the index.

U.S. Leveraged Finance | Median EBITDA Growth Steadily Slowing (Overall) Since Mid-2021, And Varying Meaningfully By Sector

Reported EBITDA growth, quarter-over-quarter change (rolling 12 months periods)

Breakdown by sector

Industry	Entity count (no.)	Q1 2021 (qoq) (%)	Q2 2021 (qoq) (%)	Q3 2021 (qoq) (%)	Q4 2021 (qoq) (%)	Q1 2022 (qoq) (%)	Q2 2022 (qoq) (%)	Q3 2022 (qoq) (%)	Q4 2022 (qoq) (%)	Q1 2023 (qoq) (%)	Q2 2023 (qoq) (%)
Aerospace/defense	21	(0.4)	11.9	3.7	2.7	(2.4)	0.1	0.0	1.9	4.7	3.5
Auto/trucks	24	17.4	32.7	1.2	3.2	(2.8)	3.4	1.2	4.3	(0.6)	3.1
Business and consumer services	68	3.0	5.7	2.2	2.1	0.7	2.7	3.9	1.9	1.5	1.9
Capital goods/machine and equipment	88	3.8	5.5	1.5	2.2	4.1	5.9	6.4	3.8	4.5	3.2
Chemicals	29	6.7	16.7	9.6	4.9	5.5	3.1	(0.9)	(6.3)	(8.8)	(12.7)
Consumer products	67	5.7	9.8	3.1	0.8	0.4	(0.1)	(1.7)	0.4	(1.5)	0.0
Forest product/building Mat/packaging	34	7.0	11.3	1.1	2.7	9.3	10.2	7.7	1.8	(1.5)	(0.7)
Healthcare	86	8.6	9.2	3.3	(0.8)	0.1	(2.0)	(1.7)	1.2	1.2	4.8
Media, entertainment, and leisure	122	4.4	27.3	10.5	5.5	4.5	2.8	1.6	3.1	0.5	(0.3)
Mining and minerals	41	8.7	22.7	15.5	13.7	13.0	7.2	(0.8)	(8.4)	(2.9)	(8.3)
Oil and gas	61	7.0	37.9	27.3	35.2	18.5	26.5	17.9	4.8	2.7	(10.2)
Restaurants/retailing	67	8.9	30.0	0.6	5.2	1.6	(0.8)	(0.9)	0.0	(0.4)	0.0
Real estate	19	1.6	6.8	4.8	5.4	2.8	4.7	4.4	3.0	(2.0)	(1.7)
Technology	77	6.1	4.6	4.6	5.0	4.1	(0.6)	0.9	4.2	1.7	3.4
Telecommunications	39	2.4	2.7	1.3	(0.7)	(1.4)	(2.7)	(0.5)	(0.3)	(2.2)	(0.3)
Transportation	23	(4.4)	30.8	16.6	14.7	2.7	0.8	1.7	3.8	4.7	5.5
Total	866	5.0	11.4	4.6	3.9	3.1	2.5	1.7	1.6	0.8	0.4

Qoq--Quarter over quarter.

U.S. Leveraged Finance | Coverage And Cash Flow Problems For Smaller, Lower-Rated Firms (Part 1)

- Smaller and lower-rated firms are constrained in their ability to support high interest costs and other cash needs. The smallest-size bucket (EBITDA < $50 mil.) shows insufficient median interest coverage of 0.5x in the 12 months ended on June 30, 2023.

Speculative-grade EBITDA interest coverage by entity size (median-reported ratios LTM)

Entity Size (measured by EBITDA)	Entity Count	2019	2020	2021Q1 LTM	2021Q2 LTM	2021Q3 LTM	2021	2022Q1 LTM	2022Q2 LTM	2022Q3 LTM	2022	2023Q1 LTM	2023Q2 LTM
<50	96	1.4	1.4	1.6	1.7	1.7	1.4	1.1	1.1	0.9	0.9	0.7	0.5
50-100	106	1.7	1.6	1.8	1.9	1.9	1.8	1.8	1.9	1.8	1.8	1.7	1.5
100-200	150	2.6	2.3	2.3	2.4	2.2	2.5	2.8	2.9	2.8	2.6	2.6	2.3
200-300	118	2.6	2.7	2.8	3.2	3.4	3.5	3.6	3.7	3.8	3.2	3.1	2.9
300-500	130	3.4	3.5	3.5	4.0	4.4	4.7	5.3	5.4	5.1	4.8	4.1	3.8
500-1000	128	4.4	3.1	3.2	4.3	5.1	5.6	5.6	5.8	5.6	5.6	5.4	5.2
>1000	138	5.2	3.8	3.9	5.2	5.4	6.7	7.5	8.0	8.3	8.4	6.8	6.5
Total	**866**	**2.9**	**2.4**	**2.6**	**3.0**	**3.1**	**3.4**	**3.5**	**3.5**	**3.6**	**3.3**	**3.1**	**2.9**

FOCF--Free operating cash flow. N.M.--Not meaningful. LTM--Last 12 months. Source: S&P Global Ratings.

U.S. Leveraged Finance | Coverage And Cash Flow Problems For Smaller, Lower-Rated Firms (Part 2)

- On a median basis, free operating cash flow (FOCF) is up moderately overall, but 'CCC' category issuers continue to struggle.
- FOCF improved in recent quarters for most rating categories, although many gains are tied to paring bloated inventories, which is not sustainable, and reducing capex, which may slow future growth.

Speculative-grade reported FOCF-to-debt (U.S. and Canada)

Issuer Credit Rating*	Entity Count	2019	2020	2021Q1 LTM	2021Q2 LTM	2021Q3 LTM	2021	2022Q1 LTM	2022Q2 LTM	2022Q3 LTM	2022	2023Q1 LTM	2023Q2 LTM
BB+	90	11.8	15.3	16.5	17.7	19.7	17.7	17.1	13.4	14.3	15.5	13.9	14.0
BB	102	13.7	16.6	16.9	16.9	16.6	13.7	12.8	12.4	12.9	9.6	9.6	10.9
BB-	104	8.2	12.0	16.9	13.9	13.5	12.5	11.3	11.5	7.8	9.2	11.0	12.1
B+	114	5.8	6.3	7.0	8.3	7.6	6.2	5.1	4.5	5.4	6.8	8.1	8.6
B	146	3.8	5.0	5.5	5.7	4.7	4.6	2.9	2.9	2.8	3.4	4.5	3.8
B-	181	1.5	4.4	4.5	2.2	0.9	0.4	(0.1)	(0.7)	(1.1)	(0.4)	(0.7)	0.1
CCC+	88	(0.5)	0.8	1.6	(0.8)	(0.9)	(3.0)	(4.4)	(4.6)	(4.8)	(4.2)	(3.2)	(3.4)
CCC	30	(1.0)	3.2	3.8	(1.4)	(3.7)	(4.1)	(5.7)	(5.5)	(7.0)	(5.4)	(4.8)	(5.7)
CCC-	10	(1.7)	(0.4)	0.1	(2.3)	(4.2)	(4.0)	(5.7)	(6.6)	(9.3)	(6.7)	(9.3)	(9.1)
CC	1	(3.3)	7.1	6.9	2.4	(3.4)	(8.4)	(6.7)	(9.1)	(0.3)	4.2	4.4	12.2
Total	**866**	**4.7**	**6.6**	**7.0**	**6.5**	**5.6**	**4.7**	**3.8**	**2.8**	**2.2**	**2.5**	**3.3**	**4.1**

FOCF--Free operating cash flow. N.M.--Not meaningful. Source: S&P Global Ratings.

U.S. Leveraged Finance | ‘B’ And 'B-’ Issuers Have Modest Interest Rate Hedges

‘B’ and ‘B-’ rated companies could see a 60-80 bps increase in interest costs for each 100 bps in higher benchmark interest rates

Implied higher benchmark rate passthrough by rating category

Rating category	Sample size	% with IR hedge	If hedged, % floating debt hedged	% floating rate debt capitalization	Implied benchmark rate flow through (%)
BB+	14	50.0	49.9	26.8	20.1
BB/BB-	23	47.8	58.3	40.2	29.0
B+	30	50.0	63.3	53.1	36.3
B	46	37.0	52.2	76.8	62.0
B-	43	18.6	64.7	90.2	79.4
CCC/CC/C	17	23.5	62.6	90.5	77.2

Source: “New Study Finds U.S. Speculative-Grade Issuers Most Vulnerable To Higher-For-Longer Interest Rate Environment,” published March 27, 2023.

- In our 2023 stress scenario analysis, we estimate median interest coverage ratios for 'B' and 'B-' issuers could fall by about 0.52x-0.66x, and the percentage of these issuers with negative interest coverage ratios could rise to the low 20% area from 15%.
- 'CCC' category downgrade risk resulting from higher-for-longer interest rates is highest in the health care equipment and services, software and services, and commercial and professional services industry groups.
- Smaller issuers with EBITDA of less than $75 million are seeing higher interest coverage ratio weakness.

U.S. Leveraged Finance | 'B' And 'B-' Issuers Could See A 0.25x Decline In Reported EBITDA Interest Coverage By Year End From The Second Quarter

Assessing 'B' and 'B-' issuers at risk

Improvement	<= 0.25x decline	>0.25x - 0.5x decline	>0.5x - 0.75x decline

Reported EBITDA margin stress

Benchmark rate (3 Month Term SOFR + 11bps CSA) — Sample size: 635	+15% (17.9% median margin)	+10% (17.1%)	+5% (16.3%)	0% (15.6%)	-5% (14.8%)	-10% (14%)	-15% (13.2%)
3.75%	2.15x	2.06x	1.96x	1.87x	1.78x	1.68x	1.59x
4.3% (est. Q2'23)	1.98x	1.89x	1.80x	1.72x LTM	1.63x	1.55x	1.46x
4.75%	1.90x	1.82x	1.74x	1.65x	1.57x	1.49x	1.41x
5.19% (Annualized Q2'23)	1.82x	1.74x	1.66x	1.58x	1.50x	1.42x	1.34x
5.75%	1.70x	1.63x	1.55x	1.48x	1.40x	1.32x	1.25x
6.25%	1.61x	1.54x	1.47x	1.40x	1.33x	1.26x	1.19x

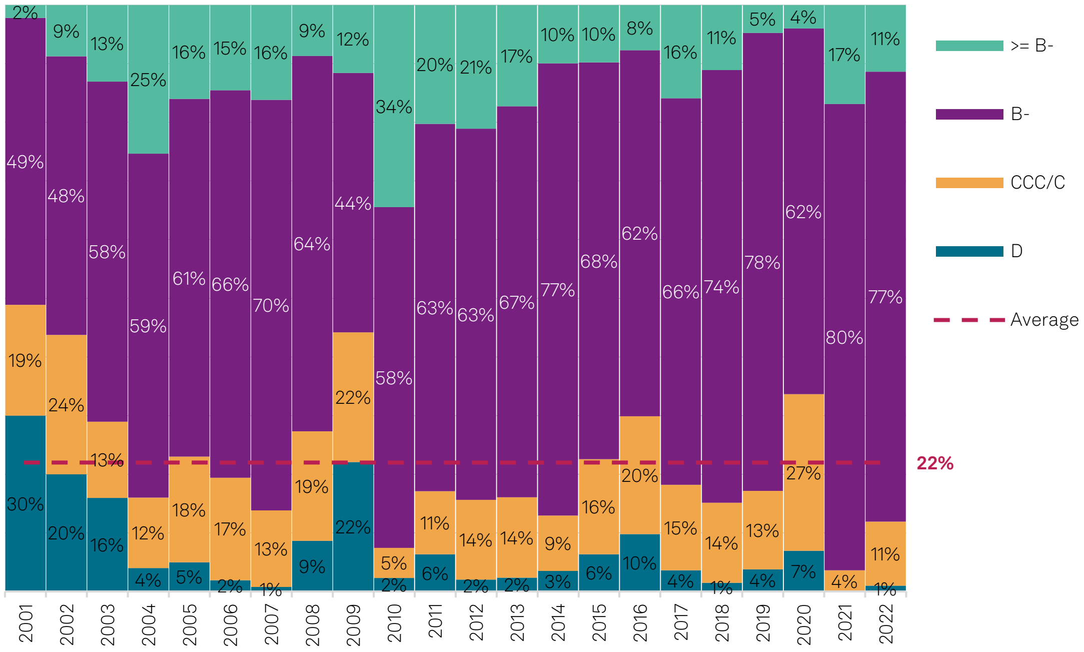
- Issuers rated 'B' and 'B-' are highly exposed to unhedged floating-rate debt obligations, and thus could see 60-80 bps increases in interest costs for every 100 bps in higher benchmark interest rates (last 12 months in the chart is as of June 30, 2023).
- The most vulnerable 'B-' issuers are in the health care equipment and services, software and services, and commercial and professional services industry groups.
- Issuers rated 'B' and 'B-' with less than $75 million EBITDA report weaker interest coverage ratios.

The hypothetical analysis uses the last 12-month financials as of June 30, 2023, as the starting point and assumes that revenue remains unchanged. For this study, we use the average for the higher benchmark rate flow-through from table 1 and chart 2 (approximately 60% for 'B' issuers and 75% for 'B-' issuers). In the column headers, the numbers in parenthesis are the median reported EBITDA margin after applying the EBITDA margin stress. Source: second-quarter 2023 update on "New Study Finds U.S. Speculative-Grade Issuers Most Vulnerable To Higher-For-Longer Interest Rate Environment."

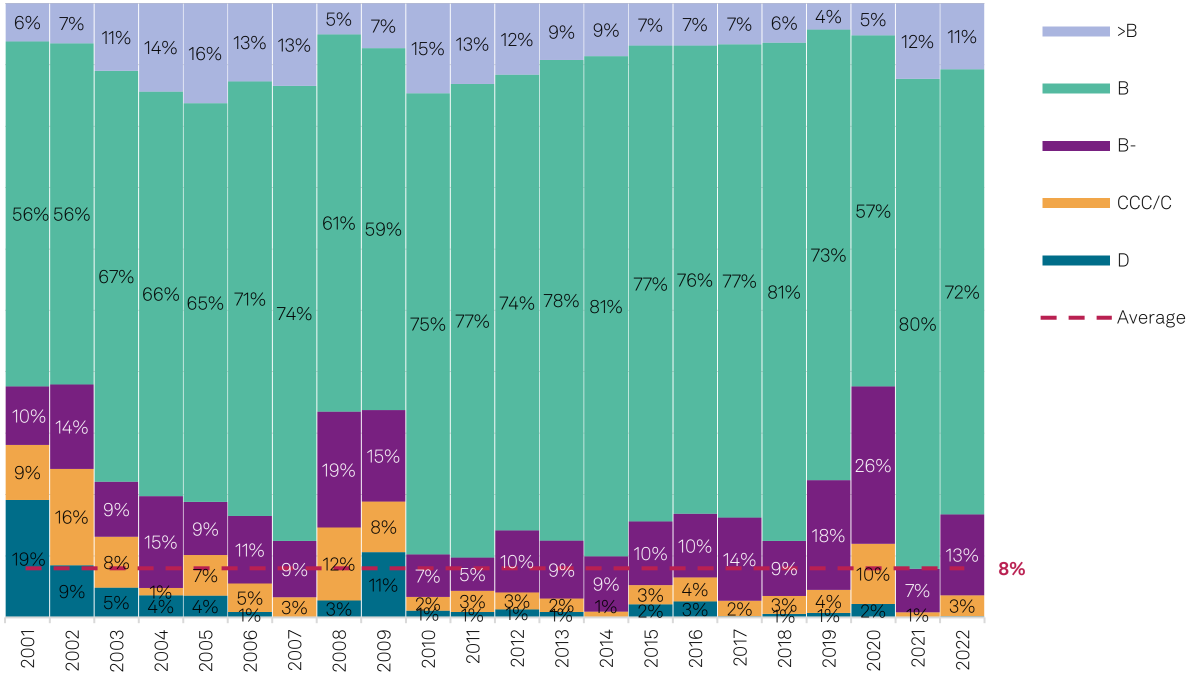
U.S. Leveraged Finance | Downgrades To 'CCC' Range Spike In Recessions

- Average one-year downgrades to the 'CCC' category for 'B' and 'B-' firms were 8% and 22%, respectively. Median one-year downgrades were 13% and 18%.
- Peak downgrades to the 'CCC' category for 'B' and 'B-' firms were 49% and 28%, respectively (both in 2001).
- Upgrades out of the 'CCC' category normally increase in the years following a recessionary period. In 2010 and 2021, approximately 32% and 31% were upgraded, respectively (compared to the 2001-2021 median/average of 13%/14%).

Movement of 'B-' issuer pool from start–to–end of year



Movement of 'B' issuer pool from start–to–end of year



Note: The data is from "Leveraged Finance: U.S. Leveraged Finance Q1 2023 Update: Ch-Ch-Ch-Changes -- Material Shifts In Key Credit Stats Drove Downgrades To 'B-' And 'CCC', And Upgrades To 'B-'," published on May 4, 2023. The data for the samples for each quarterly report are rebalanced each quarter following selection criteria, as detailed in the "The Data Used in This Report" section. FOCF--Free operating cash flow. LTM--Last 12 months ending at/around the dates indicated. ICR—Issuer credit rating. Source: S&P Global Ratings U.S. and Canada ratings.

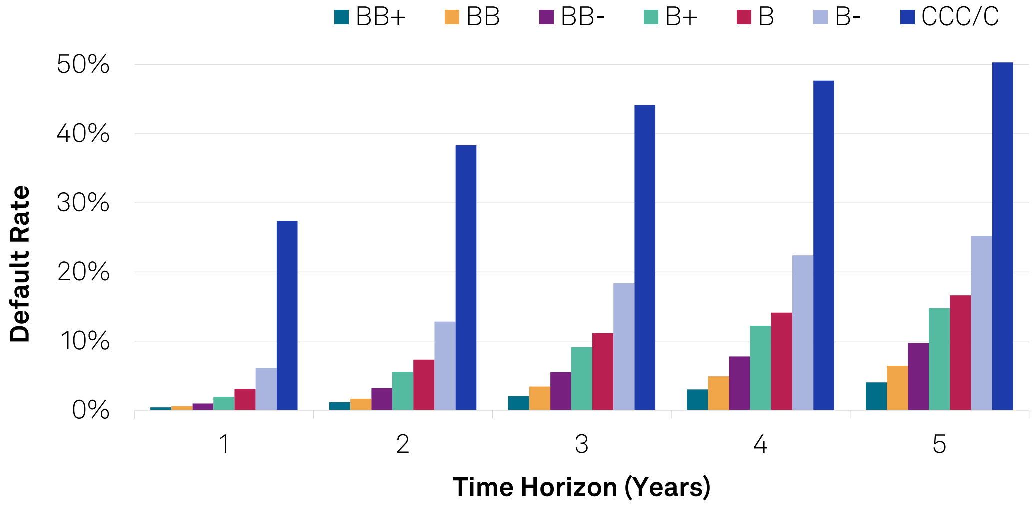
S&P Global Ratings

U.S. Leveraged Finance | 'CCC' Rated Companies Have Higher Default Risk

- We consider companies rated 'CCC+' or lower as more likely to default than not. Avoiding a default is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitments.
- We view defaults for companies rated in the 'CCC' category as mostly a matter of timing. Generally, a visible default scenario would be tied to the timeframes noted below, although the timing of selective defaults (i.e. distressed exchanges) are often not predictable.
- In contrast, a company rated 'B-' is viewed as having a viable path to perform and improve its credit measures.
- Defaults and cumulative defaults are materially higher for companies with 'CCC' category ratings, even compared to 'B-' rated issuers. The cumulative default figures shown below do not adjust for a high level of ratings withdrawals over the time-period (more than 25%, on average, over a three-year period), as default tracking stops one year after a rating withdrawal.

Issuer credit rating	Anticipated time to default
CCC+	More than 12 months away
CCC	Within 12 months
CCC-	Within 6 months

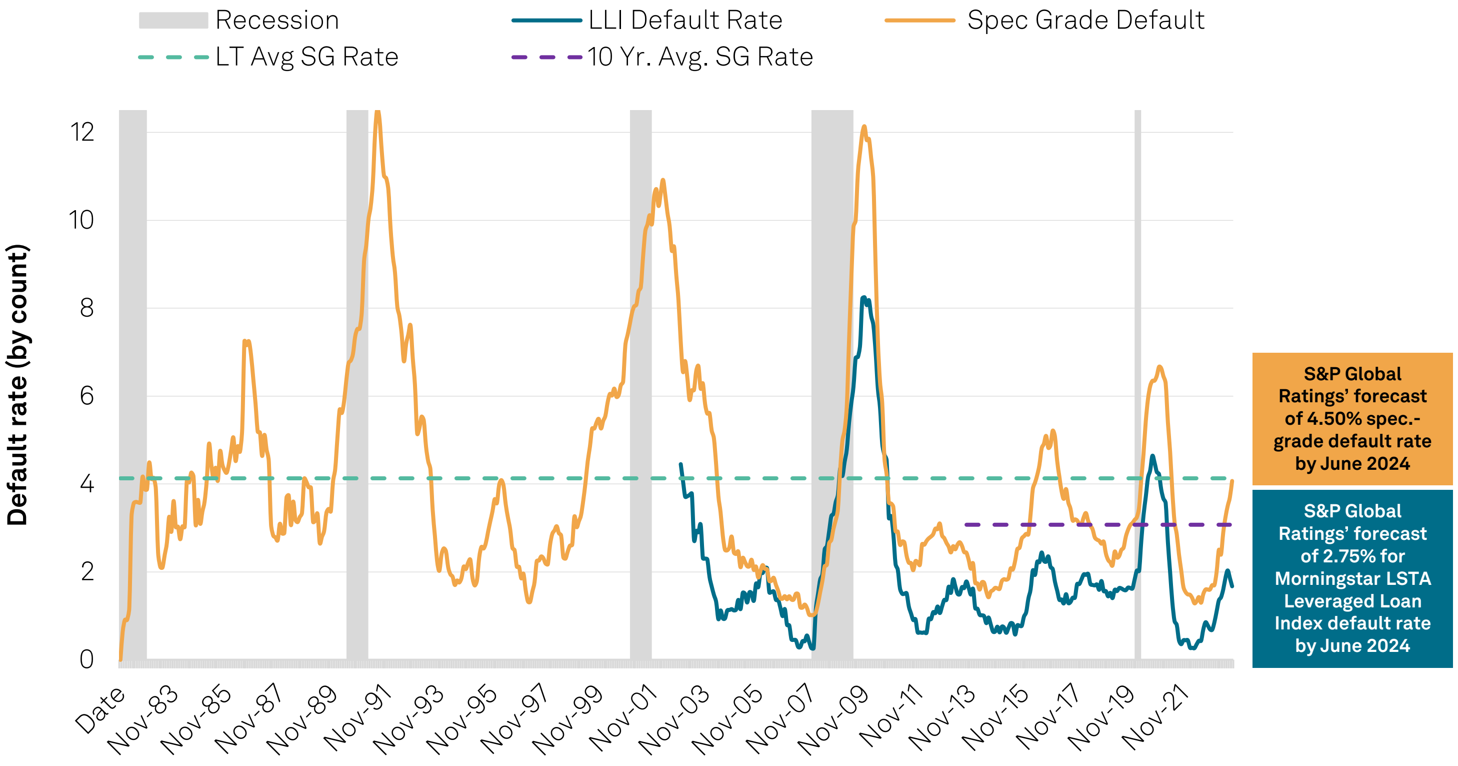
Average cumulative default rates for spec.-grade U.S. corporates by issuer rating (1981–2022)



The chart shows average U.S. Corporate Cumulative Default Rates (by Issuer Credit Ratings or ICRs) from Table 14 in the 2022 Annual U.S. Corporate Default And Rating Transition Study, published June 13, 2023.

U.S. Leveraged Finance | Speculative-Grade Defaults Are Rising And Could Reach 4.5% By June 2024, While Loans Could Reach 2.75%

Last 12 months' default rates through September 2023



Source: S&P Global Ratings. The speculative-grade default rate for Sept. 30, 2023, is preliminary and subject to change.

Two default rate forecasts:

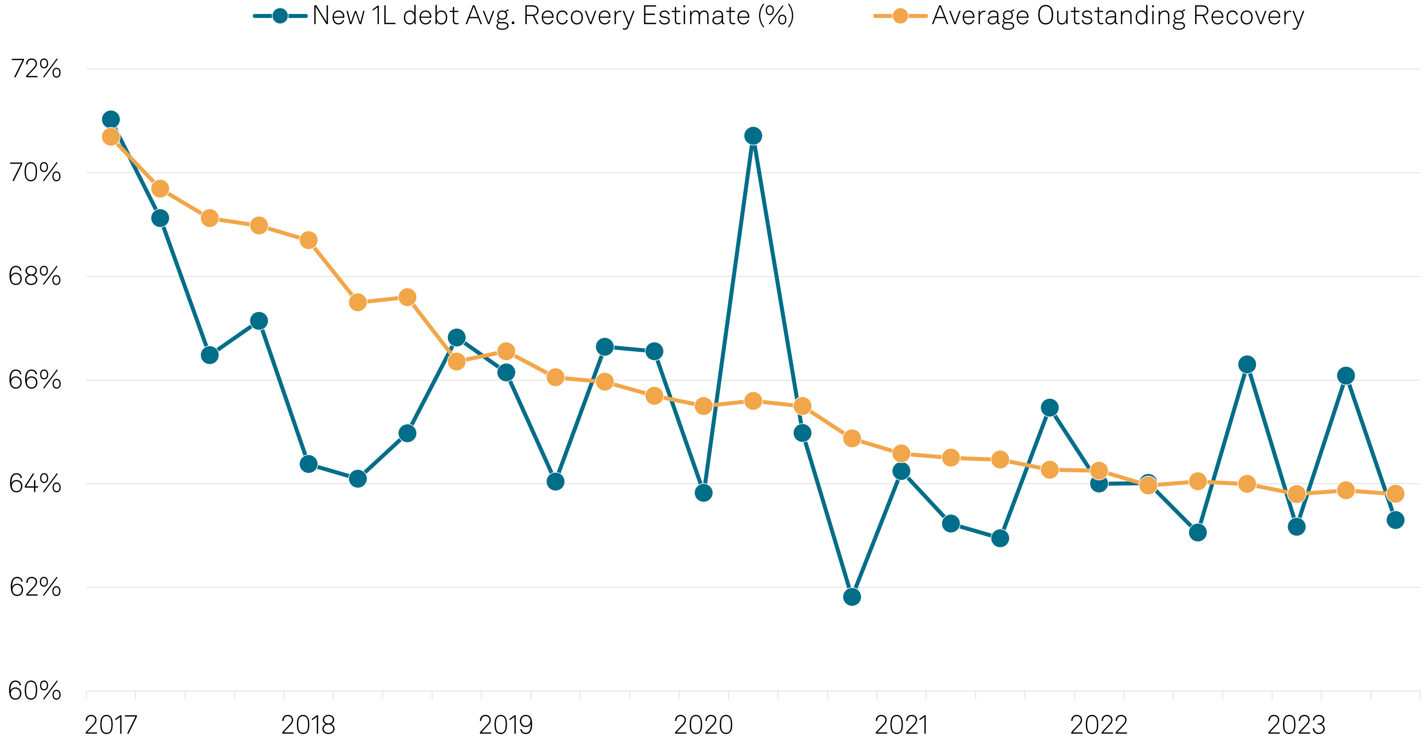
- Our overall speculative-grade default rate is calculated on an issuer count basis for all bond and loan defaults, including selective defaults.
- Default rates for the Morningstar Leveraged Loan Index (issuer count) exclude bond defaults and selective defaults.
- Selective defaults are significant, representing approximately 47% of all U.S. speculative-grade defaults in 2020, 64% in 2021, 60% in 2022, and roughly half of all defaults year-to-date (YTD) in 2023.
- After spiking in late 2020, default rates declined rapidly, but began to increase in second-quarter 2022. At year-end 2022, the Morningstar Leveraged Loan Index and speculative-grade default rates were 0.7% and 1.7%, respectively.

Forward-view: default risks are increasing

- For the U.S., our speculative-grade default forecast (issuer count) for June 2024 is 4.50% (base case; range 2.00%-6.25%).
- For the Morningstar LSTA Leveraged Loan Index, our default rate forecast (issuer count) for June 2024 is 2.75% (base case; range 1.00%-4.75%).

U.S. Leveraged Finance | First-Lien Recovery Expectations Are Now Well Below Historical Averages

Expected recovery on newly issued and outstanding first-lien debt (U.S. and Canada)



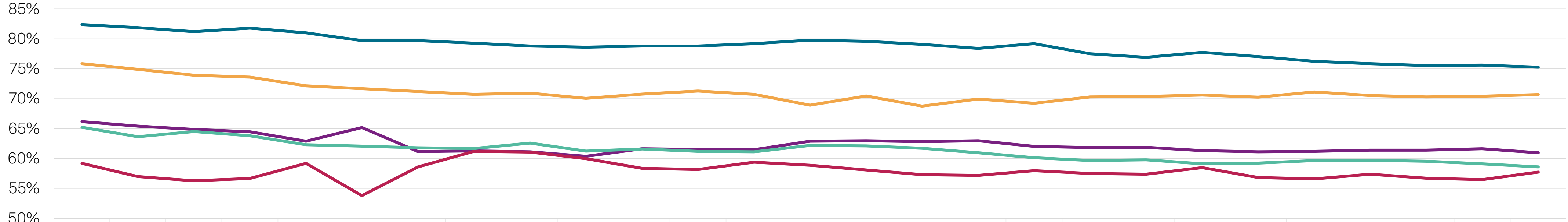
Data through Sept. 30, 2023, based on the rounded point-estimates included in our recovery ratings for rated nonfinancial corporate entities in the U.S. and Canada. Source: S&P Global Ratings.

- Estimated recoveries on first-lien debt have declined gradually.
- **Average expected recoveries are materially lower** than long-term U.S. historical averages for first-lien debt of 75%-80% (past 35+ years).
- Estimated **average recoveries on first-lien debt have declined in recent years** and often sit at the low end of the historical range. Out-of-court restructurings are likely to push first-lien recoveries down and dispersion up.
- **Higher total debt leverage, higher first-lien debt leverage, and reduced junior debt cushions** are fundamental drivers of the decline.
- Covenant-lite term loans also contribute to lower recovery expectations, although as a secondary factor.

U.S. Leveraged Finance | First-Lien Recovery Expectations Vary By Rating Level

- Average recovery expectations for first-lien debt vary by issuer rating.
- Higher-rated issuers, which tend to be less levered and have larger junior debt cushions, tend to have higher recoveries.
- **Average recovery expectations have drifted down since 2017.**
- **Overall average first-lien recoveries (see prior slide) have drifted down more significantly due to a higher concentration of lower-rated entities ('B' and 'B-').**

Average recovery estimate of first-lien debt: U.S. and Canada



	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	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
BB+/BB/BB-	82%	82%	81%	82%	81%	80%	80%	79%	79%	79%	79%	79%	79%	80%	80%	79%	78%	79%	78%	77%	78%	77%	76%	76%	76%	76%	75%
B+	76%	75%	74%	74%	72%	72%	71%	71%	71%	70%	71%	71%	71%	69%	70%	69%	70%	69%	70%	70%	71%	70%	71%	71%	70%	70%	71%
B	66%	65%	65%	64%	63%	65%	61%	61%	61%	60%	62%	62%	62%	63%	63%	63%	63%	62%	62%	62%	61%	61%	61%	61%	61%	62%	61%
B-	65%	64%	65%	64%	62%	62%	62%	62%	63%	61%	62%	61%	61%	62%	62%	62%	61%	60%	60%	60%	59%	59%	60%	60%	60%	59%	59%
CCC+ and below	59%	57%	56%	57%	59%	54%	59%	61%	61%	60%	58%	58%	59%	59%	58%	57%	57%	58%	58%	57%	58%	57%	57%	57%	57%	57%	58%

Data through Sept. 30, 2023, based on the rounded point-estimates included in our recovery ratings for rated nonfinancial corporate entities in the U.S. and Canada. Source: S&P Global Ratings.

U.S. Leveraged Finance | Aggressive Loan Restructurings Significantly Impair Recoveries And Don't Usually Resolve Financial Problems

Comparison of the expected recovery impairment from select loan restructuring

	Collateral transfers:	Dates	RR% before	RR% after	Change 1L % par
1	J.Crew *	7/17	40	15	-25
2	PetSmart	6/18	60	45	-15
3	Neiman Marcus *	9/19	55	55	0
4	Cirque du Soleil *	3/20	75	75	0
5	Revlon *	5/20	40	15	-25
6	Party City *	7/20	75	45	-30
7	Travelport (+priming loan)	9/20	75	0	-75
8	Envision Healthcare #1 *	4/22	50	30	-20
9	Shutterfly/Photo Holding	6/23	60	35	-25
10	US Renal Care #1 (transfer)	6/23	50	30	-20

	Priming loan exchanges:	Dates	RR% before	RR% after	Change 1L % par
1	Murray Energy *	6/18	65	0	-65
2	NPC International Inc. *	2/20	55	40	-15
3	Serta Simmons *	6/20	55	5	-50
4	Renfro #1	7/20	35	20	-15
5	Boardriders	8/20	55	5	-50
6	TriMark/TMK Hawk #1	9/20	55	0	-55
7	GTT *	12/20	50	40	-10
8	Renfro #2	2/21	20	10	-10
9	TriMark/TMK Hawk #2	7/22	60	30	-30
10	Medical Depot	7/22	15	10	-5
11	Envision Healthcare #2 *	8/22	30	Varied	Up to -30
12	Mitel Networks International	11/22	50	5	-45
13	BW Homecare/Elara Caring	12/22	50	20	-30
14	Rodan & Fields	4/23	55	40	-15
15	RobertShaw / Range Parent	5/23	50	Varied	Up to -50
16	Wheel Pros	9/23	50	30	-20

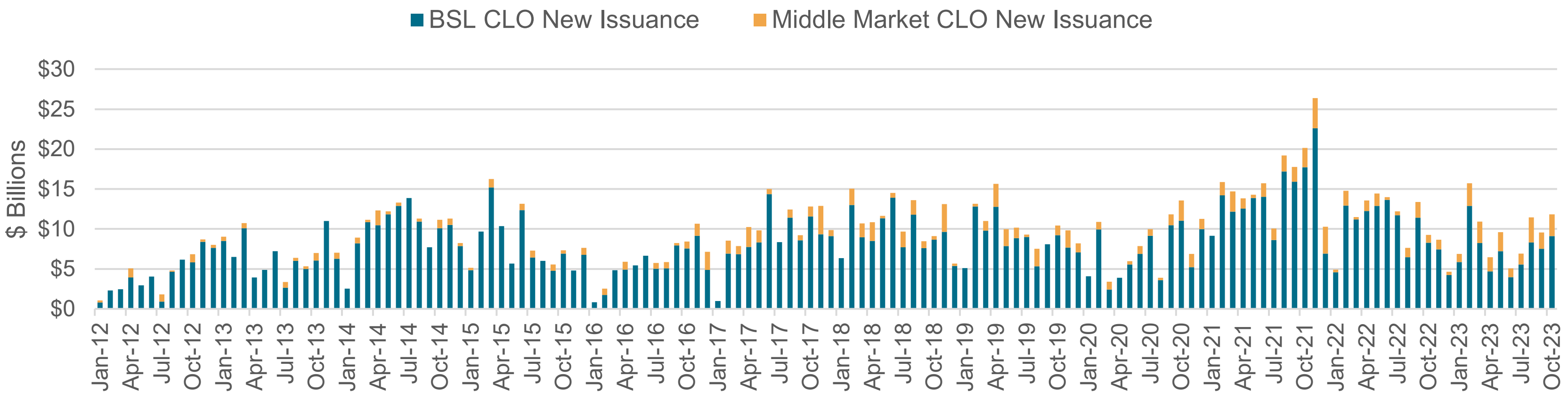
Notes: *Indicates the company subsequently filed for bankruptcy. Excludes cases where all or essentially all lenders participated in the restructuring and realized the same impact. Source: S&P Global Ratings and company reports. "A Closer Look At How Uptier Priming Loan Exchanges Leave Excluded Lenders Behind" published June 15, 2021, plus data on subsequent restructurings for rated entities and public transactions.

U.S. Leveraged Finance | Related Research

- Scenario Analysis: Testing Private Debt's Resilience Through The Credit Estimate Lens, published Nov. 2, 2023
- Leveraged Finance: Creative Structuring Helps Trinseo PLC, Comes With Lowered Recovery Prospects And Higher Costs, published Sept. 19, 2023
- U.S. Leveraged Finance Q2 2023 Update: Disparities Emerge By Sector, Rating, Company Size, And Debt Cushion, published July 27, 2023
- Credit Trends: Global Refinancing--Progress Made As Pressure Remains, published July 25, 2023
- Global Leveraged Finance Handbook, 2022-2023, published July 17, 2023
- Rocky Road Ahead For Recurring-Revenue Loans, published June 21, 2023
- Refinancing Needs And Rate Uncertainty Drive Issuers To The High-Yield Bond Market, published June 1, 2023
- Leveraged Finance: U.S. Leveraged Finance Q1 2023 Update: Ch-Ch-Ch-Changes -- Material Shifts In Key Credit Stats Drove Downgrades To 'B-' And 'CCC', And Upgrades To ‘B-’, published May 4, 2023
- Credit FAQ: Risks To Leveraged Loans And CLOs Amid An Increasingly Cloudy Macroeconomic Environment, published March 29, 2023
- New Study Finds U.S. Speculative-Grade Issuers Most Vulnerable To Higher-For-Longer Interest Rate Environment, published March 27, 2023
- Fifth Annual Study Of EBITDA Addbacks Finds Management Continues To Regularly Miss Projections, published Feb. 16, 2023
- U.S. Leveraged Finance Q4 2022 Update: Inflation Pressures Hit Margins, Rate Rises To Hit Cash Flow, published Feb. 7, 2023
- What Rising Interest Rates Could Mean For U.S. Business And Technology Services Companies Rated 'B' And 'B-’, published Jan. 18, 2023
- Assessing The Impacts Of Higher Interest Rates On 'B-' Rated U.S. Telecom And Cable Issuers, published Jan. 11, 2023
- Credit FAQ: Envision Healthcare Corp.'s Two Major Restructurings In 100 Days, published Sept. 2, 2022
- A Closer Look At How Uptier Priming Loan Exchanges Leave Excluded Lenders Behind, published June 15, 2021
- Health Services Outlook Negative With Elevated Risks For Lowest-Rated Companies, March 21, 2023
- Evaluating The Impact Of EBITDA Stress and Higher Interest Rates On U.S. E&C Issuers, Jan. 20, 2023

U.S. CLOs | New Issuance Perks Up, While Resets And Refis Remain Slow

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



U.S. CLO Issuance, 2012 through Oct. 2023 ($ billions)

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2022 Oct.	2023 Oct.	YTD 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	105.31	74.65	-29.1%
	MM CLOs	4.15	4.31	6.32	5.15	8.28	14.49	15.97	14.82	11.33	22.53	11.98	10.36	21.12	104.0%
	Total	**54.26**	**82.43**	**124.10**	**98.91**	**72.30**	**118.07**	**128.86**	**118.47**	**93.54**	**187.49**	**128.97**	**115.67**	**95.77**	**-17.2%**
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	17.35	11.52	-33.6%
	MM CLOs	0.00	0.00	0.00	0.00	0.00	5.48	3.92	2.46	1.09	13.70	7.42	7.00	0.81	-88.4%
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**39.73**	**167.01**	**155.89**	**43.79**	**31.48**	**251.31**	**24.77**	**24.34**	**12.33**	**-49.3%**

Source: S&P Global Ratings, LCD.

- Our outlook for CLO issuance in 2023 is a range of $90 billion-$110 billion for U.S. CLO new issue volume, and $10 billion to $15 billion for CLO resets and refis.
- In YTD 2023 (through October), new issuance of BSL CLOs is down by 29.1% compared to the same period last year.
- Credit spreads on new issue BSL CLO notes have gradually tightened over the course of 2023. The average ‘AAA’ note from a “benchmark” BSL CLO (five-year reinvestment period, two-year non-call) had a credit spread of SOFR + 178.4 in September and October, down from SOFR + 204 back in January.
- Given current loan prices and spreads, however, the arbitrage remains challenged and most new issue CLOs this year have relied on in-house equity or a captive equity fund rather than third-party equity.
- Middle-market CLOs have been a bright spot, with YTD (though October) new issuance up 104% over last year. By July 2023 YTD issuance had surpassed full-year 2022 issuance.

U.S. BSL CLOs | Assets From ‘B-’ Obligors May Have Peaked

The U.S. CLO Insights Index averages CLO portfolio metrics across a large sample of reinvesting S&P Global Ratings-rated U.S. BSL CLOs and provides a one-year lookback at performance. It includes CLOs that have been reinvesting for the entirety of the past year and is based on a cohort of transactions with at least 11 months of processed trustee reports. Therefore, numbers from prior months can change as new CLOs are added or removed from the one-year lookback period.

As of date	'B-' (%)	CCC' category (%)	Nonperforming assets (%)	SPWARF	WARR (%)	Watch negative (%)	Negative outlook (%)	Weighted avg. price of portfolio ($)	Jr. O/C cushion (%)	% of target par	'B-' on negative outlook (%)
10/31/2022*	29.48	4.32	0.29	2742	59.86	0.51	13.65	92.48	4.94	100.15	3.14
11/30/2022*	30.37	4.34	0.25	2739	59.92	0.32	13.81	93.14	4.94	100.15	3.50
12/31/2022*	30.41	4.75	0.40	2753	59.93	0.12	14.48	92.88	4.94	100.17	3.72
1/31/2023*	30.51	4.97	0.38	2755	60.04	0.15	14.93	94.79	4.84	100.16	3.83
2/28/2023*	30.84	4.65	0.57	2760	59.87	0.21	15.77	94.68	4.76	100.14	4.04
3/31/2023*	30.92	4.86	0.56	2757	59.69	0.32	16.19	93.99	4.68	100.14	4.15
4/30/2023*	31.11	5.30	0.60	2765	59.58	0.32	16.71	94.25	4.61	100.13	5.33
5/31/2023*	30.01	6.19	0.68	2783	59.39	0.51	16.05	93.36	4.47	100.03	4.66
6/30/2023*	29.20	6.75	0.63	2774	59.43	0.46	15.88	94.86	4.32	99.98	4.74
7/31/2023*	28.65	6.54	0.69	2764	59.34	0.32	16.55	95.36	4.24	99.92	5.37
8/31/2023*	28.54	6.96	0.60	2763	59.36	0.33	17.19	95.76	4.18	99.90	5.79
9/30/2023**	28.72	7.06	0.55	2762	59.11	0.62	17.40	95.91	4.18	99.88	6.19
10/23/2023***	28.57	7.11	0.58	2765	59.06	0.66	17.46	95.80	4.18	99.88	6.23

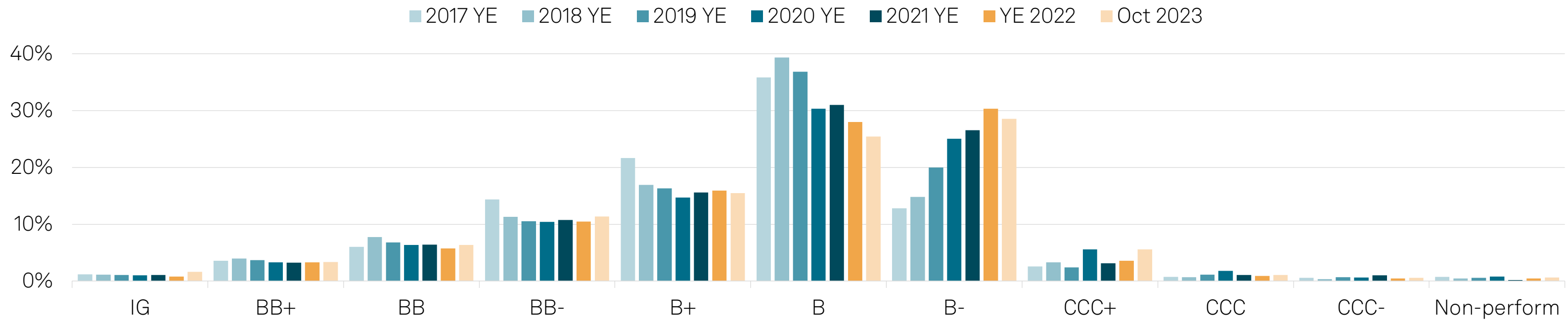
*index metrics based on end-of-month ratings and pricing data and as of month portfolio data available.

**index metrics based on Sept. 30, 2023, ratings and pricing data and latest portfolio data available to us.

***index metrics based on Oct. 23, 2023, ratings and pricing data and latest portfolio data available to us.

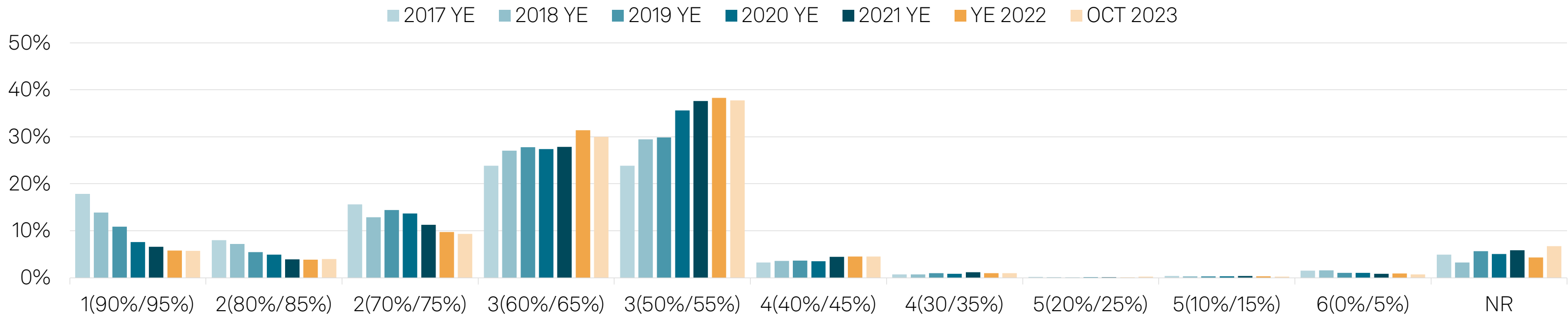
U.S. BSL CLOs | ‘B-’ Assets Drift Downward, And ‘CCC+’ Assets Edge Upward

Rating distribution for assets in reinvesting U.S. BSL CLOs (2017-2023)



Latest data as of Aug. 1, 2023. YE--Year end. Source: S&P Global Ratings.

Recovery ratings distribution for assets in reinvesting U.S. BSL CLOs (2017–2023)

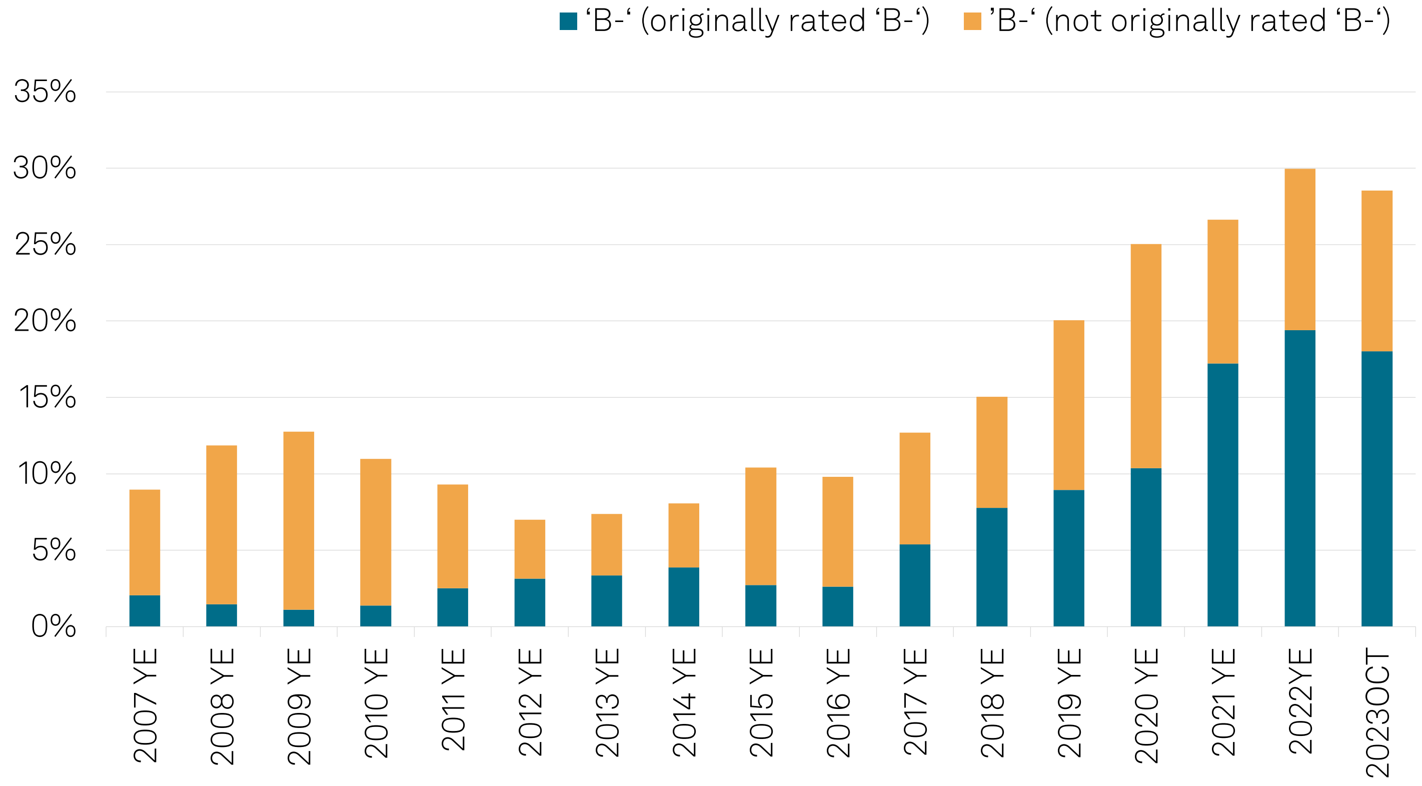


Latest data as of Aug. 1, 2023. NR--Not rated. YE--Year end. Source: S&P Global Ratings.

- Exposure to ‘B-’ rated issuers has declined below 30.0%-28.5%. Several issuers have been lowered to ‘CCC’ this year; meanwhile, downgrades to ‘B-’ from ‘B’ and higher have also slowed.
- Historically, companies rated ‘B-’ are more likely to see a downgrade (by definition, into the ‘CCC’ range or lower) or default than loans from companies rated ‘B’ or higher, even in benign economic periods.
- Over the past several years, there has also been a significant increase in loans with a recovery rating of ‘3’. In particular, point estimates of either 50% or 55% (i.e., the 3L category in the chart) make up over 37% of total CLO asset par, compared with about 30% prior to the COVID-19 pandemic.

U.S. BSL CLOs | Majority Of Current ‘B-’ Assets Were Born That Way (Part 1)

'B-’ exposure across reinvesting U.S. BSL CLOs



CLO--Collateralized loan obligation. AUM--Assets under management. YE--Year end. Source: S&P Global Ratings.

- ‘B-’ exposure across reinvesting U.S. BSL CLOs are at record levels, starting 2023 at around 30%, up from 26% at the start of 2022.
- Historically, ‘B-’ exposure across U.S. BSL CLOs was much smaller and was typically made up of issuers that were downgraded to ‘B-’ from a higher rating .
- During periods of stress, ‘B-’ exposure increased (as well as ‘CCC’ category exposure) as issuers experienced downgrades to ‘B-’ (see growth in yellow bar during stress periods 2008-2010, 2015-2017, and 2020-2021).

S&P Global Ratings

U.S. BSL CLOs | Majority Of Current 'B-' Assets Were Born That Way (Part 2)

Proportion of 'B-' exposures across CLO Index at the start of 2022

(% Of CLO assets)	% AUM at start of 2022 (a)	Downgraded in 2022 (% of AUM at start of 2022) (b)	Proportion downgraded in 2022 (b/a)
'B-' original rating at start of 2022	17.29	0.84	4.86
Not original 'B-' rating at start of 2022	8.92	1.49	16.66
Total 'B-' at start of 2022	26.21	2.33	8.88

Proportion of 'B-' exposures across CLO Index at the start of 2023

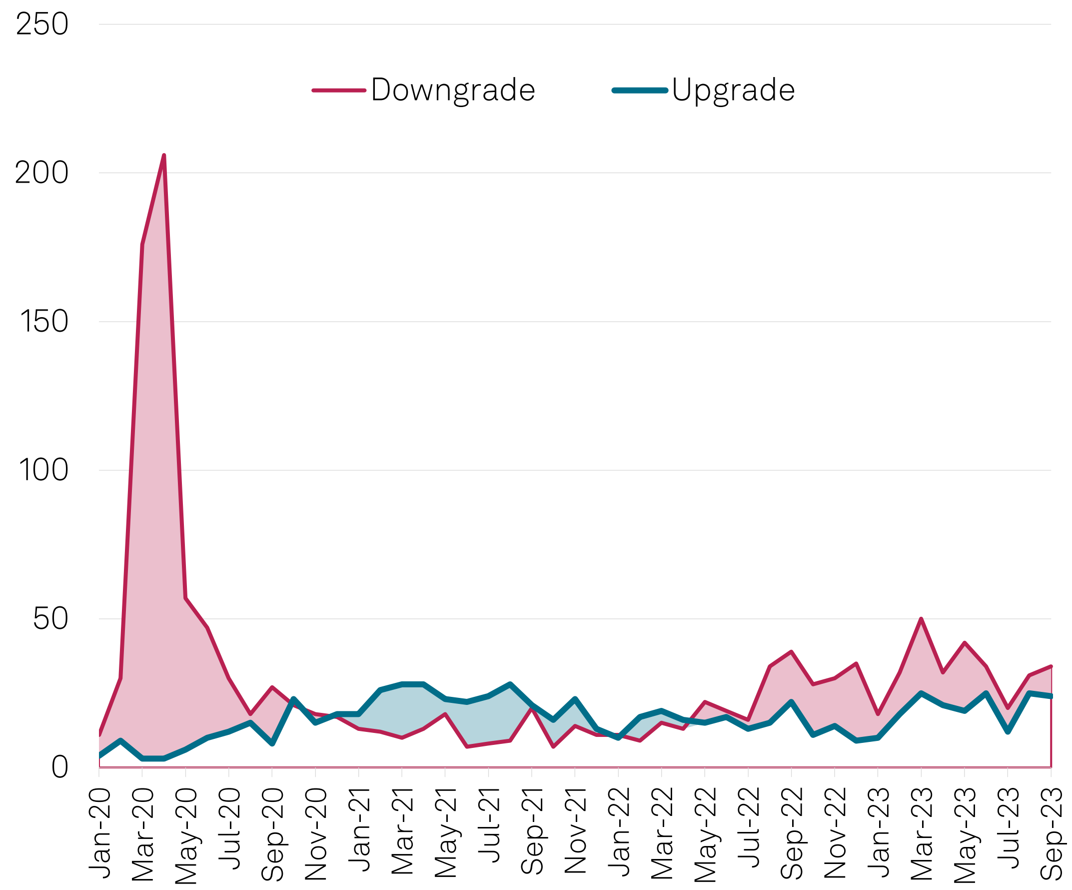
(% Of CLO assets)	% AUM at start of 2023 (a)	Downgraded in 2023 (thru OCT) (% of AUM at start of 2023) (b)	Proportion downgraded in 2023 (b/a)
'B-' original rating at start of 2023	19.41	2.01	10.35
Not original 'B-' rating at start of 2023	10.55	1.81	17.12
Total 'B-' at start of 2023	29.96	3.82	12.74

CLO--Collateralized loan obligation. AUM--Assets under management. YE--Year end.
Source: S&P Global Ratings.

- Since 2017, there has been significant growth in issuers originally rated 'B-' (blue bar).
- 10.55% of the 'B-' exposures across U.S. BSL CLO portfolios at the start of 2023 saw downgrades (into the 'CCC' category) by October 2023. 10.35% of the original 'B-' exposures experienced downgrades YTD, while 17.12% of the not original 'B-' exposures experienced downgrades during the same time period.
- As of October 2023, a majority (just under two thirds) of the current 'B-' exposures are from issuers that were originally rated 'B-' (fairly recently) and have not experienced a rating action yet.

U.S. BSL CLOs | Rating Actions On Companies In BSL CLO Portfolios

U.S. BSL CLO obligor rating changes (2020–2023)



DG--Downgrade. UG—Upgrade. Source: S&P Global Ratings.

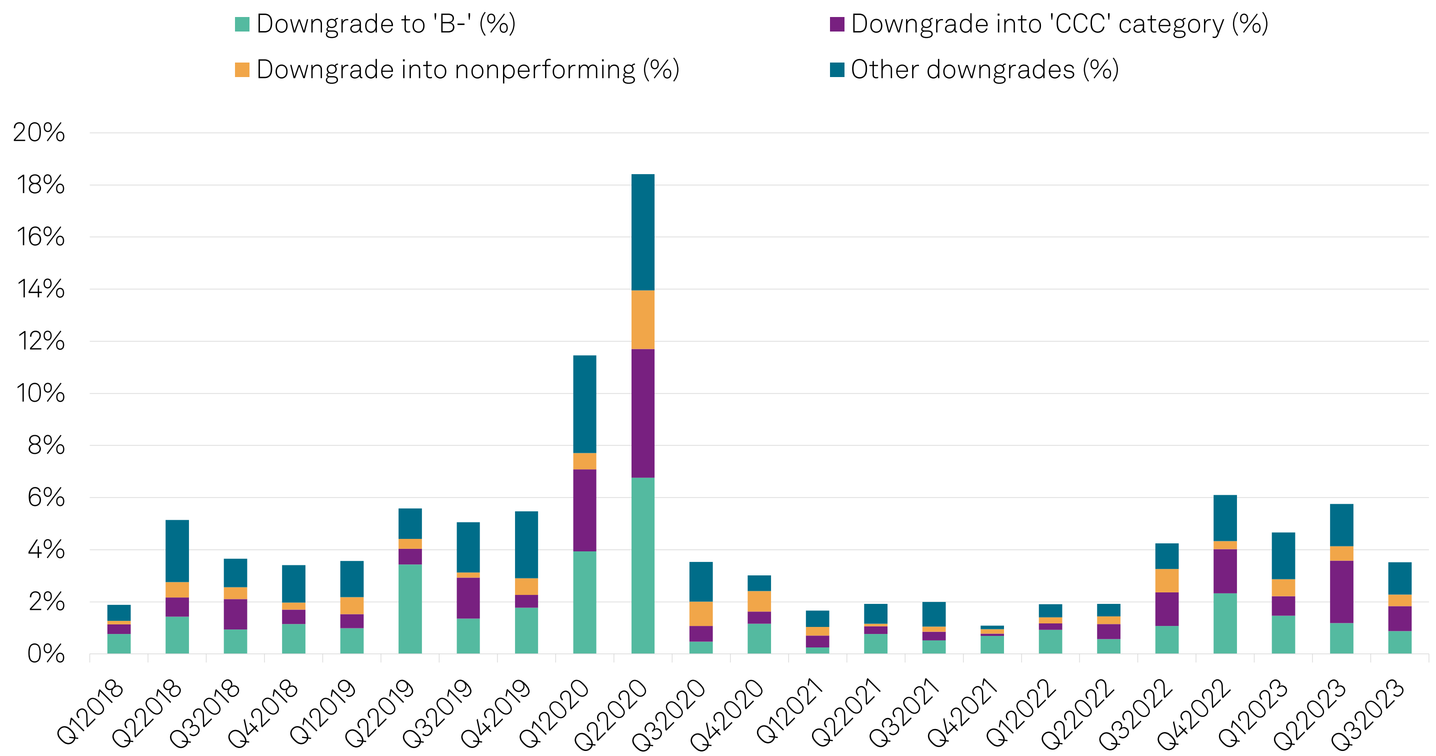
U.S. BSL CLO obligor rating changes (2022–2023)

		Downgrades				Upgrades		
Month	Total DG	DG to 'B-'	DG into 'CCC' category	DG into non-performing	Total UG	UG to 'B' or above	UG to 'B-'	UG to 'CCC' level (from non-performing)
Jan-22	**11**	4	1	1	**10**	3	3	0
Feb-22	**9**	2	4	1	**17**	3	3	0
Mar-22	**15**	3	3	0	**19**	6	0	2
Apr-22	**13**	3	4	3	**16**	1	5	1
May-22	**22**	6	5	3	**15**	3	3	1
Jun-22	**19**	7	3	4	**17**	3	5	0
Jul-22	**16**	7	4	1	**13**	3	3	0
Aug-22	**34**	10	9	3	**15**	4	3	1
Sep-22	**39**	14	9	4	**22**	8	3	2
Oct-22	**28**	7	9	4	**11**	0	1	3
Nov-22	**30**	7	6	2	**14**	1	1	2
Dec-22	**35**	8	15	3	**9**	4	2	0
Jan-23	**18**	3	5	1	**10**	3	1	3
Feb-23	**32**	5	6	7	**18**	3	1	4
Mar-23	**50**	13	8	13	**25**	7	0	8
Apr-23	**32**	6	9	6	**21**	3	2	2
May-23	**42**	8	13	9	**19**	6	0	4
Jun-23	**34**	3	13	9	**25**	6	1	8
Jul-23	**20**	3	1	6	**15**	5	2	0
Aug-23	**31**	2	9	5	**25**	1	3	7
Sep-23	**34**	8	5	4	**24**	3	4	4
Total	**564**	**129**	**141**	**89**	**360**	**76**	**46**	**52**

S&P Global Ratings

U.S. BSL CLOs | CLO Exposures To Downgrades Declined In Third-Quarter 2023

Average CLO assets downgraded (% total par) by quarter

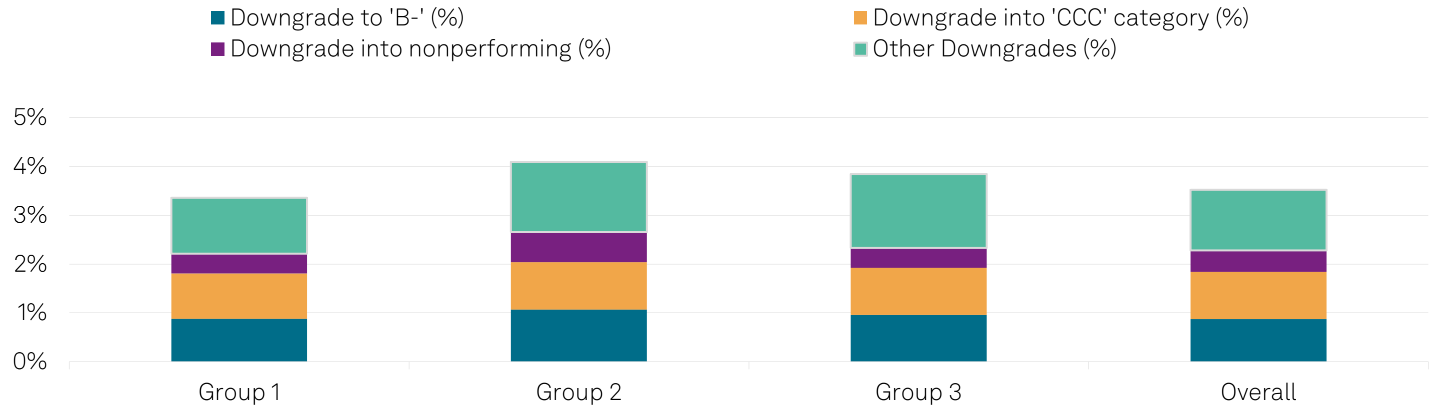


Source: S&P Global Ratings.

- After peaking in second-quarter 2020, BSL CLO exposure to downgrades have remained muted for several quarters, until third-quarter 2022.
- The impact of the rating actions since can be seen in BSL CLO collateral pools. The chart on the left shows BSL CLO collateral (by par) that has been downgraded during each quarter since 2018.
- To do this, we looked at the obligors in BSL CLO collateral pools at the start of each quarter, and then tracked which of those obligors saw ratings lowered during the quarter.
- Downgrades of corporate ratings into the 'CCC' range also decreased during third-quarter 2023.

U.S. BSL CLOs | Exposure To Third-Quarter Rating Actions By Manager Cohort (By Post-Pandemic Issuance Count, Based On LCD Data)

Average CLO assets downgraded
(% total par, by CLO manager group for third-quarter 2023)



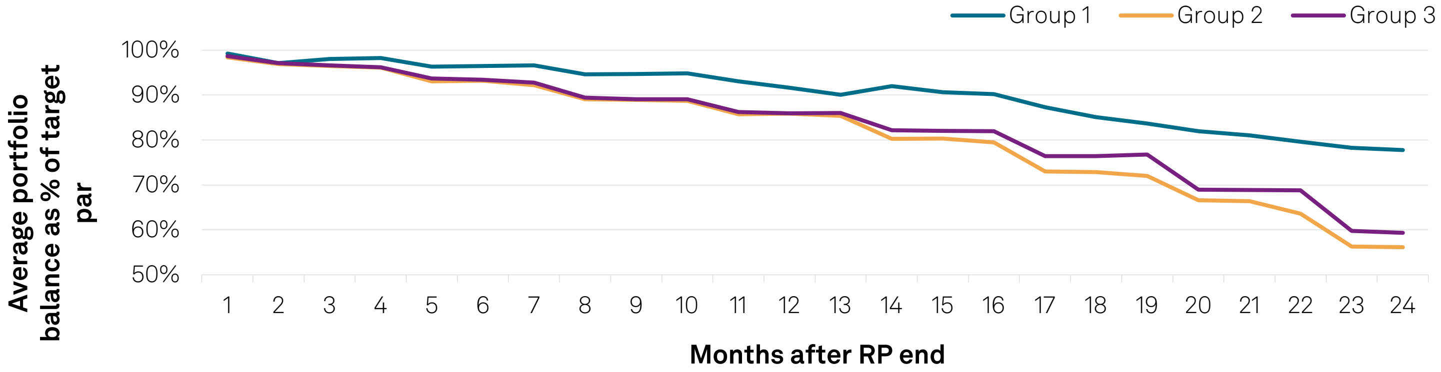
Manager at close of deal	Upgrades (%)	Downgrades (%)	Downgrade to 'B-' (%)	Downgrade into 'CCC' category (%)	Downgrade into nonperforming (%)	Other Downgrades (%)	Top 250
Group 1	3.35	3.36	0.88	0.93	0.40	1.14	54.03
Group 2	3.41	4.09	1.07	0.96	0.62	1.44	48.60
Group 3	3.65	3.84	0.96	0.97	0.40	1.51	50.67
Average Total	3.45	3.52	0.87	0.97	0.44	1.24	53.26

Source: S&P Global Ratings.

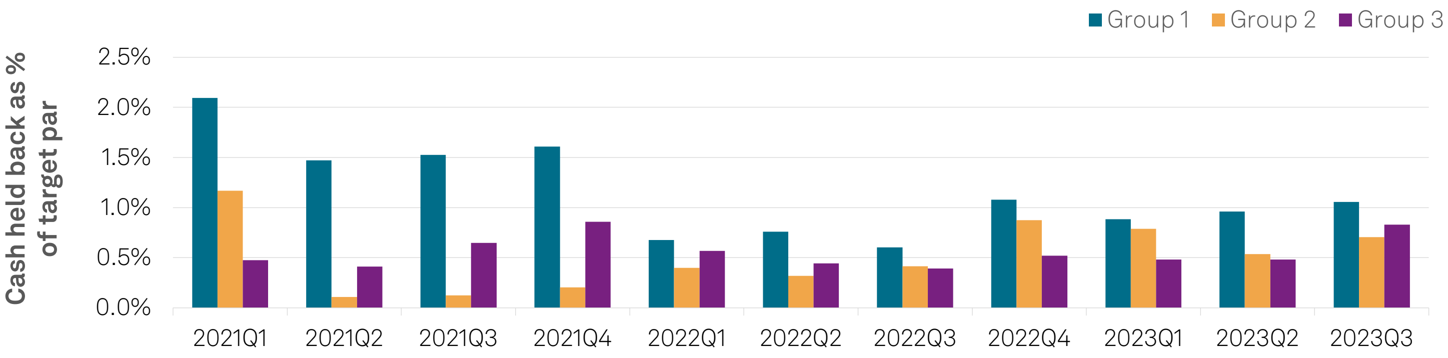
- U.S. BSL CLO exposures to third-quarter 2023 downgrades declined to 3.52% from 5.75% the quarter prior.
- We bucketed our rated U.S. BSL CLO transaction data into three cohorts based on the dollar amount of U.S. BSL CLOs the manager has closed since the start of the pandemic, as detailed in the third-quarter 2023 CLO Global Databank maintained by Pitchbook:
  - Group 1: more than $2.3 billion;
  - Group 2: between $1.0 billion and $2.3 billion; and
  - Group 3: less than $1.0 billion.
- Relative to groups 2 and 3, CLOs issued by group 1 managers had less exposure to corporate ratings that experienced a downgrade in third-quarter 2023.
- Group 1 CLO managers tend to have higher exposure to the widely held names (top 250). These larger issuers tend to have more rating stability during periods of stress.

U.S. BSL CLOs | Variance In Amortization

Average Portfolio Par Balance After Reinvestment Period (O/S Transactions That Ended Reinvestment Period 2021 Or Later)



Average Cash Held Back During Amortization Payment Date



*Data as of Oct. 1, 2023. Data includes currently outstanding transactions only. Source: S&P Global Ratings.

- When grouped by issuance amount since the pandemic, group 1 managers (see slide 31 for details of the three manager groups) tend to amortize slower (for example, on average, across our sample, it took about two years for group 1 managers to amortize the portfolio by 20%, while it took 15 months for group 2 managers to amortize 20%).
- Across deals that ended their reinvestment period (RP) in 2021 and later, group 1 managers preserved more of their target par by the end of the RP period; thus, the portfolio par balance was higher relative to the group 2 and group 3 transactions (some deals also had slight senior note paydowns due to O/C failures during the pandemic).
- Most transactions have some level of flexibility to reinvest loan prepayments during the amortization phase. Some managers may choose to use the principal cash from prepayments to pay down the CLO notes, while some managers may choose to reinvest this principal cash (given maintain/improve requirements laid out in the indenture).
- Since 2021, group 1 managers tend to hold more cash back during payment dates, an indication of propensity to reinvest.

U.S. BSL CLOs | The Value Of Active Management (2022 Through Q3 2023)

- Turnover of assets in BSL CLO collateral pools in 2022 was just under 50% during the seven quarters between first-quarter 2022 and third-quarter 2023, meaning almost half of the loans that had been in CLO collateral pools at the start of 2022 were no longer in the collateral pools by the end of third-quarter 2023.
- To examine the impact that portfolio turnover had on CLO credit metrics, we looked at the actual change in BSL CLO credit metrics seven quarters after the start of 2022, including portfolio turnover (**table 1**); metrics from the same BSL CLO collateral pools while assuming they were static CLOs with no trading or asset turnover (**table 2**); and the difference between the actual CLO portfolios and hypothetical static CLO portfolios (**table 3**).
- On average, the trades increased the proportion of loans from 'B-' companies, because, when a company saw its rating lowered to the 'CCC' range, a manager would often sell loans from that company and purchase loans from a 'B-' rated company.
- On average, all other CLO credit metrics benefitted from the trading activity: exposure to 'CCC' assets and defaulted assets was lowered, the SPWARF was lower (indicating higher average portfolio ratings), and the junior O/C test cushion was greater.

Table 1 - Actual BSL CLO Performance (Q1 2022-Q3 2023)

Metric	1/1/22	9/30/23	Change
Portfolio turnover (%)	N/A	48.13	48.13
Exposure to 'B-' assets (%)	26.58	28.44	1.86
Exposure to 'CCC' assets (%)	4.50	7.32	2.82
Exposure to defaulted assets (%)	0.13	0.60	0.47
SPWARF	2692	2769	76
Portfolio % of target par (%)	99.91	99.82	-0.09
Junior O/C test cushion (%)	4.72	3.93	-0.80

Table 2 - Hypothetical Static Pool BSL CLO Performance (Q1 2022-Q3 2023)

Metric	1/1/22	9/30/23	Change
Portfolio turnover (%)	N/A	0.00	0.00
Exposure to 'B-' assets (%)	26.58	27.26	0.68
Exposure to 'CCC' assets (%)	4.50	10.05	5.56
Exposure to defaulted assets (%)	0.13	1.28	1.15
SPWARF	2692	2888	195
Portfolio % of target par	99.91	99.91	0.00
Junior O/C test cushion (%)	4.72	3.02	-1.70

Table 3 - Manager Impact On CLO Metrics

Metric	Year-end results: managed vs. hypothetical
Portfolio turnover	48.13% higher
Exposure to 'B-' assets	1.18% higher
Exposure to 'CCC' assets	2.74% lower
Exposure to defaulted assets	0.67% lower
SPWARF	119 lower
Portfolio % of target par	0.09% lower
Junior O/C test cushion	0.90% higher

N/A--Not applicable. O/C--Overcollateralization. SPWARF-S&P Global Ratings' weighted average rating factor.-Source: S&P Global Ratings.

U.S. BSL CLOs | Managers Continue To ‘De-Risk’ CLO Portfolios

	Purchases			Sales		
Quarter	WARF	Avg. price	Avg. target par %	WARF	Avg. price	Avg target par %
Q1 2022	2802	98.96	10.48	2660	99.00	5.99
Q2 2022	2693	96.69	8.37	2788	96.57	5.98
Q3 2022	2699	94.14	6.17	2847	93.87	4.37
Q4 2022	2509	95.20	6.85	2892	93.27	4.03
Q1 2023	2580	97.08	8.07	3114	93.07	4.64
Q2 2023	2493	96.97	7.78	3031	93.16	5.04
Q3 2023	2459	97.52	7.09	3000	95.08	4.44

BSL CLO asset trades by company rating (third-quarter 2023)

Rating category	Purchase (% of trades)	Avg purchase price	Sales (% of trades)	Avg sale price
Investment grade	4.07	97.37	1.14	98.68
‘BB’ category	24.44	98.68	18.74	99.18
‘B+’	15.99	98.18	13.99	98.39
‘B’	31.13	97.87	24.49	97.81
‘B-’	21.64	96.24	27.00	95.30
‘CCC’ category	2.67	90.09	13.01	85.31
Nonperforming	0.06	76.96	1.63	50.55

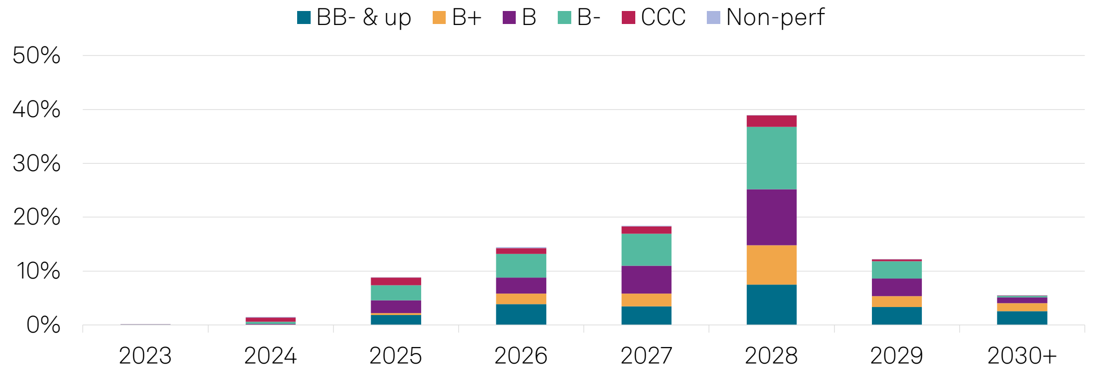
Source: S&P Global Ratings.

- Since the start of 2023, the credit quality of the assets purchased tend to be notably higher (lower SPWARF) than the credit quality of the assets sold, evidence of CLO manager efforts at de-risking.
- This comes at a modest cost, though: on average, each sale incurs a modest par loss.
- Average prices of both purchase and sales have increased slightly in third-quarter 2023 trades, a result of recent increases in loan prices.
- The average prices of the purchases in 2023 are higher than the prices of the sales, resulting in slight par loss across several transactions.
- The proportion of sales of ‘B-’, ‘CCC’ category, and nonperforming assets are greater than the proportion of purchases from these rating categories, further evidence of managers’ attempts at de-risking.

U.S. BSL CLOs | Loan Maturity Wall Within CLO Collateral Pools

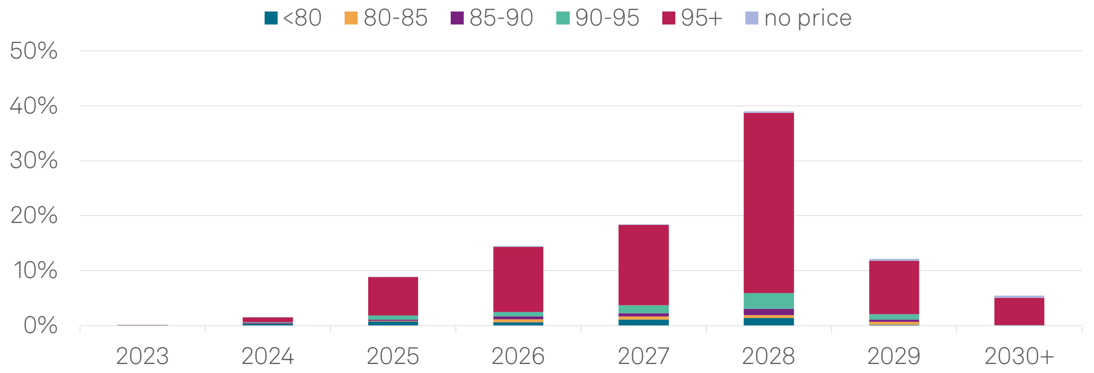
- With limited refinancing activity in the corporate loan market, maturity walls have become an increasing topic of discussion.
- Some loan issuers have done amend-to-extends, and others have refinanced into the high-yield bond and private credit markets.
- Near-term maturities within CLO collateral pools remain limited, but assets maturing in 2023 and 2024 are significantly lower quality than assets with maturities of 2025 and later.

Maturity wall by obligor rating (fourth-quarter 2023)



(%)	2023	2024	2025	2026	2027	2028	2029	2030+
BB- & up	45.2	1.7	21.2	26.6	18.8	19.2	27.5	47.5
B+	0.0	4.6	3.5	13.7	12.7	18.7	16.6	26.7
B	0.0	7.8	26.9	20.5	28.1	26.7	26.9	19.8
B-	2.4	27.4	31.5	30.3	32.0	29.6	26.0	5.6
CCC	33.5	50.1	16.6	7.6	7.4	5.4	3.0	0.3
Non-performing	18.9	8.4	0.3	1.2	0.9	0.3	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

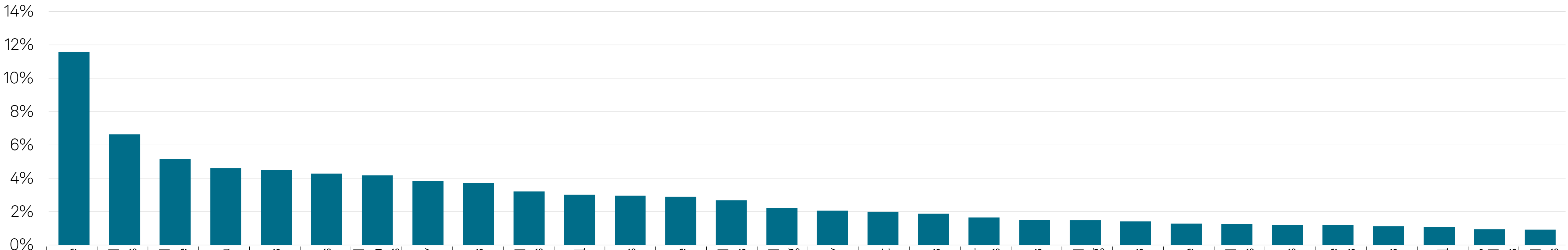
Maturity wall by loan price (fourth-quarter 2023)



(%)	2023	2024	2025	2026	2027	2028	2029	2030+
<80	24.5	21.3	8.4	4.2	6.0	3.5	1.5	0.2
80-85	0.2	1.4	1.2	3.6	3.0	1.4	3.9	0.2
85-90	4.5	11.0	2.9	3.9	3.3	3.0	3.5	0.1
90-95	0.0	5.8	8.3	5.3	7.7	7.3	8.0	1.3
95+	68.6	59.4	78.8	82.0	79.3	84.1	79.9	90.5
No price	2.2	1.1	0.3	1.0	0.6	0.8	3.2	7.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: S&P Global Ratings, LoanX.

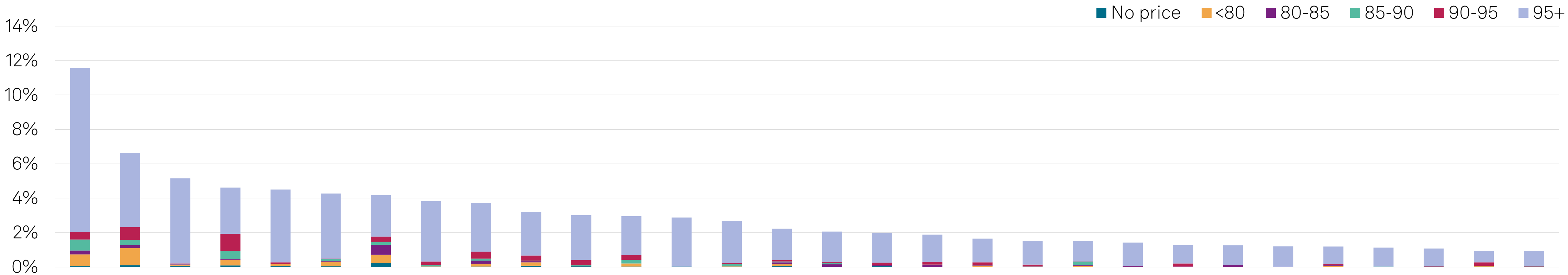
U.S. BSL CLOs | Credit Metrics Across Top 30 GIC Industry Exposures



	Software	Healthcare Providers and Services	Hotels, Restaurants and Leisure	Media	Capital Markets	IT Services	Diversified Telecommunication Services	Machinery	Chemicals	Commercial Services and Supplies	Specialty Retail	Professional Services	Insurance	Trading Companies and Distributors	Containers and Packaging	Health Care Technology	Entertainment	Building Products	Diversified Consumer Services	Food Products	Construction and Engineering	Auto Components	Aerospace and Defense	Life Sciences Tools and Services	Pharmaceuticals	Oil, Gas and Consumable Fuels	Airlines	Road and Rail	Electronic Equipment, Instruments and Components	Interactive Media and Services
Assets (%)	11.58	6.63	5.15	4.62	4.5	4.28	4.18	3.83	3.71	3.21	3.02	2.96	2.89	2.69	2.22	2.06	2	1.88	1.65	1.51	1.49	1.42	1.28	1.26	1.2	1.2	1.12	1.08	0.94	0.93
SPWARF(i)	3284	3303	2209	2795	2376	2736	2945	2867	2774	2752	2624	2509	2750	2661	2988	3624	2318	2614	2756	2853	2912	2701	2862	2637	1959	2394	1889	2007	2866	2492
WAP(i)	96.04	90.93	98.62	91	97.76	95.19	91.61	98.56	95.75	96.19	98.07	94.63	99.49	98.19	95.87	96.39	98.31	97.38	97.04	98.41	95.97	98.03	98.42	97.61	99.71	96.52	98.81	99.93	96.23	98.55
WARR (%)(i)	57.87	54.73	67.67	72.02	53.18	58.58	63.51	56.31	62.22	64.51	60.03	57.59	52.97	55.11	58.12	65.4	63.93	55.93	56.1	53.61	59.62	57.73	56.78	54.78	66.87	61.44	65.33	74.81	57.68	62.03
WAS (%)(i)	3.78	3.93	3.22	3.65	3.46	3.73	3.1	3.72	3.89	3.81	3.64	3.69	3.54	3.33	3.67	4.01	3.36	3.5	3.86	4.02	3.53	4.11	3.8	3.34	3.59	3.27	3.11	3.6	3.88	3.63
Neg. Outlook (%)	19.07	32.71	7.03	25.94	13.27	10.77	33.38	16.61	22.94	16.02	18.27	24.09	0	5.26	10.2	33.63	1.49	4.08	6.24	28.31	23.29	3.59	24.84	21.68	12.24	7.67	20.74	0	5.73	2.08
CreditWatch neg. (%)	1.31	0.9	0	0	4.17	0	1.34	0	0	0	0	1.6	0	1.53	0	0	5.38	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: "U.S. BSL CLO Top Obligors And Industries Report: Third-Quarter 2023," published Oct. 11, 2023

U.S. BSL CLOs | Loan Price Distribution Across Top 30 GIC Industry Exposures

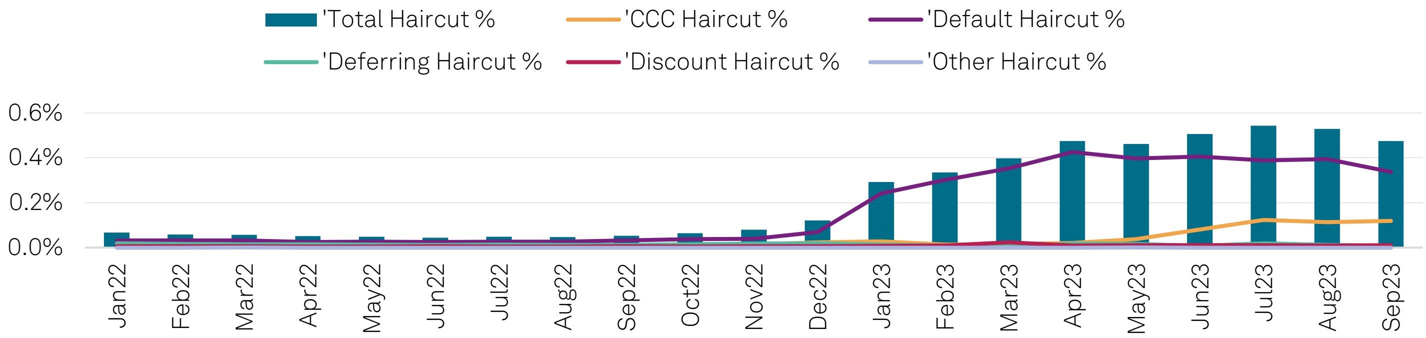


Loan price	Software	Healthcare Providers and Services	Hotels, Restaurants and Leisure	Media	Capital Markets	IT Services	Diversified Telecommunication Services	Machinery	Chemicals	Commercial Services and Supplies	Professional Services	Specialty Retail	Insurance	Trading Companies and Distributors	Containers and Packaging	Health Care Technology	Entertainment	Building Products	Diversified Consumer Services	Construction and Engineering	Food Products	Automobile Components	Aerospace and Defense	Life Sciences Tools and Services	Oil, Gas and Consumable Fuels	Pharmaceuticals	Ground Transportation	Passenger Airlines	Electronic Equipment, Instruments and Components	Interactive Media and Services
Assets (%)	11.58	6.63	5.15	4.62	4.5	4.28	4.18	3.83	3.71	3.21	3.02	2.96	2.89	2.69	2.22	2.06	2	1.88	1.65	1.51	1.49	1.42	1.28	1.26	1.2	1.2	1.12	1.08	0.94	0.93
<80	5.9	15.0	1.2	7.1	2.6	6.2	11.8	0.4	4.4	6.1	0.5	6.3	0.0	0.8	4.9	0.4	0.8	0.0	3.9	0.4	4.9	0.1	1.1	0.0	0.0	4.9	0.0	0.0	3.0	0.0
80-85	2.0	2.8	0.4	0.8	0.4	0.4	13.9	0.0	4.8	1.8	0.4	0.0	0.0	0.0	5.1	6.9	1.7	5.2	1.1	0.0	2.1	2.7	0.1	8.6	0.0	3.2	0.0	0.0	0.4	0.0
85-90	5.5	4.3	0.1	10.2	0.0	3.4	4.2	2.1	3.2	1.2	1.5	6.9	0.0	4.4	2.2	4.2	0.0	1.5	0.1	0.7	13.4	0.3	0.0	0.0	0.0	0.0	1.7	0.0	2.3	0.2
90-95	3.8	11.5	0.7	21.6	1.8	0.5	6.9	5.0	11.1	9.5	10.3	9.7	0.0	2.2	3.6	3.1	7.5	7.9	10.6	8.2	0.3	1.1	15.0	0.0	0.0	4.3	0.0	3.1	22.0	3.5
95+	82.3	64.8	96.0	58.2	94.0	88.5	57.8	91.8	75.7	79.1	86.2	76.2	99.0	91.5	82.1	85.3	87.3	84.6	83.6	90.4	78.6	95.7	83.4	90.4	98.8	86.2	97.8	94.2	71.5	94.0
No price	0.5	1.6	1.5	2.1	1.1	1.0	5.3	0.7	0.8	2.3	1.2	0.8	1.0	1.0	2.1	0.0	2.8	0.8	0.8	0.3	0.8	0.1	0.5	1.0	1.2	1.4	0.5	2.7	0.8	2.3
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

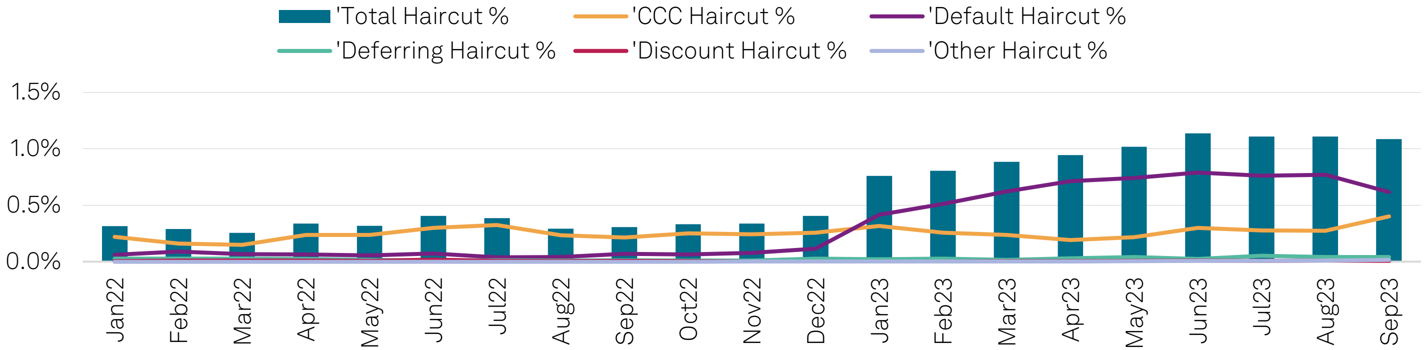
Loan prices as of Oct. 1, 2023. Source: S&P Global Ratings, LoanX.

U.S. BSL CLOs | Defaulted Asset Haircuts Have Plateaued, While Excess 'CCC' Asset Haircuts Creep Upward

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



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

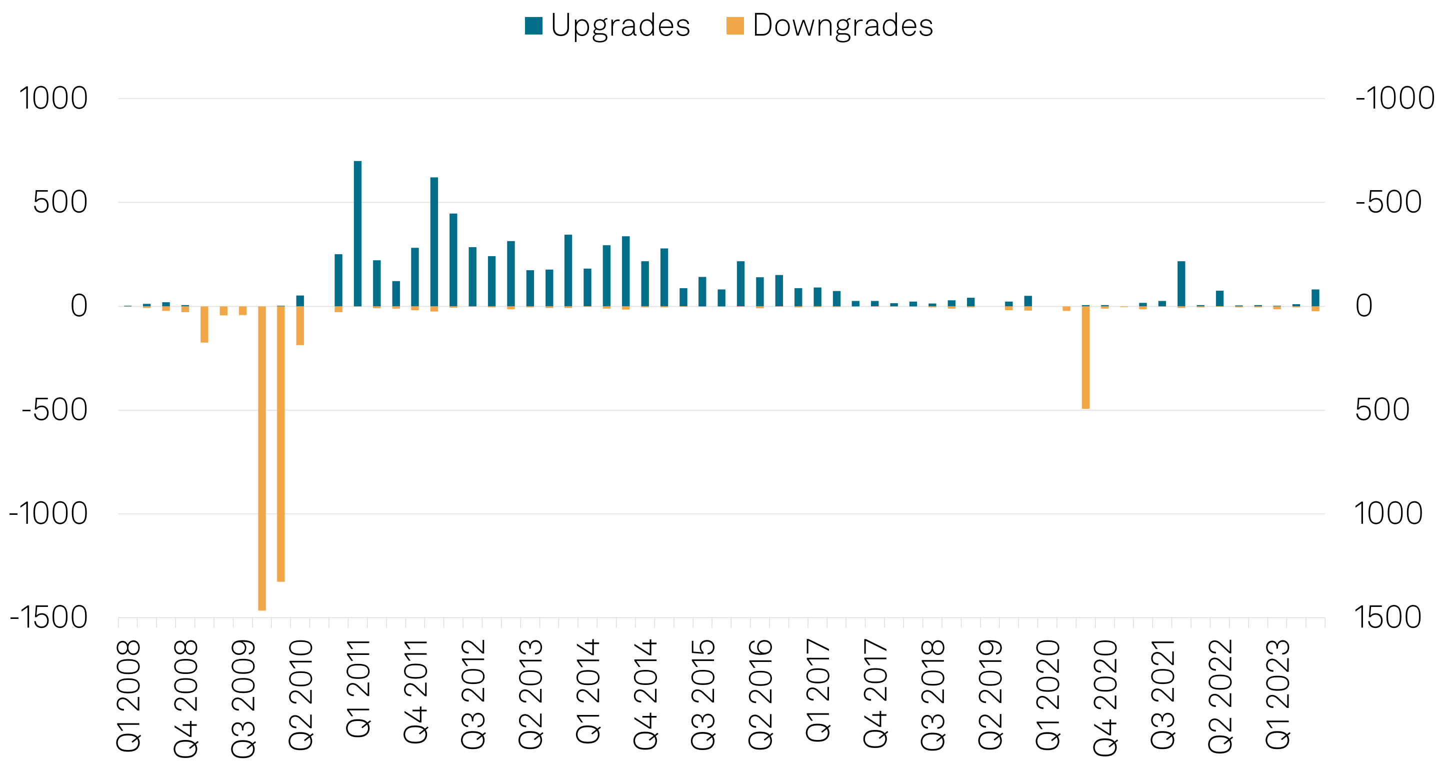


O/C--Overcollateralization. Source: S&P Global Ratings.

- There was a slight decline in the O/C haircuts in September 2023 trustee reports, as haircuts from default exposures have declined slightly.
- O/C cushions have declined since the start of the year; though on average, they still remain positive at over 4% as of the end of third-quarter 2023 across reinvesting transactions.
- Haircuts from excess 'CCC' exposures were minimal in early 2022, but have increased slightly in 2023 for reinvesting transactions.
- The O/C haircuts for the reinvesting and amortizing U.S. BSL CLOs mostly come from default exposures, followed by haircuts from excess 'CCC' exposures, and then by deferring assets, etc. Most reinvesting deals are not close to breaching their 7.5% threshold, though a few pre-pandemic transactions exceeded the 7.5% threshold.
- Some amortizing and a handful of reinvesting transactions are currently failing their junior O/C cushions.

U.S. CLO Ratings | No CLO 'AAA' Tranche Ratings Lowered Since 2011

U.S. CLO rating upgrades and downgrades (2008-Q3 2023)



Source: S&P Global Ratings.

- Downgrades to U.S. CLO 1.0 ratings in 2009 and 2010 were mostly driven by the effects of GFC, as well as our CLO criteria change.
- Upgrades to U.S. CLO 1.0 and 2.0 ratings after the GFC were mostly driven by improvement in corporate credit and CLO tranche amortization.
- U.S. CLO reset activity reduced the volume of U.S. CLO 2.0 amortization from 2017, leading to a reduction in volume of upgrades.
- No 'AAA' rated CLO tranche has been downgraded since 2011.
- Despite the steady drip of corporate rating downgrades, our outlook for CLO ratings remains stable, especially for more senior, higher-rated CLO tranches, given the structural protections built into CLOs and rating cushions for most tranches.
- We do expect some CLO tranche rating downgrades, but these should mostly be from subordinate tranches of amortizing CLOs originated prior to the 2020 pandemic.

U.S. CLOs | (Almost) 30 Years And 59 Tranche Defaults

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)	Defaults(ii)	Currently rated(ii)	Original rating(i)	Defaults(ii)	Currently rated(ii)
AAA (sf)	1,540	0	0	3,639	0	1,626
AA (sf)	616	1	0	2,964	0	1,398
A (sf)	790	5	0	2,449	0	1,198
BBB (sf)	783	9	0	2,230	0	1,184
BB (sf)	565	22	0	1,818	8	975
B (sf)	28	3	0	389	11	187
Total	4,322	40	0	13,489	19	6,568

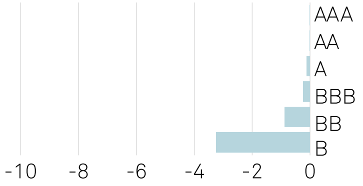
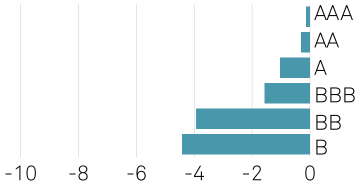
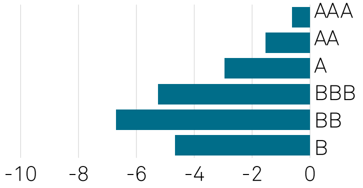
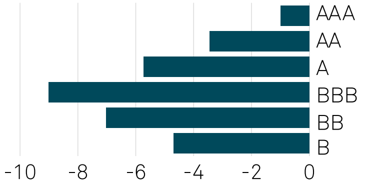
Likely future defaults: U.S. CLO tranches currently rated 'CCC-' or 'CC'

Transaction	Tranche	Year originated	Original rating	Current rating
Marathon CLO VII Ltd.	D	2014	BB- (sf)	CCC- (sf)
Avery Point IV CLO Ltd.	F	2014	B- (sf)	CC (sf)
BNPP IP CLO 2014-II Ltd.	E	2014	BB (sf)	CC (sf)
Telos CLO 2014-6 Ltd.	E	2014	BB (sf)	CCC- (sf)

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

- 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 CLOs | Rating Stress Scenarios (May 2023 Update)

Scenario		Impact across CLO sample	Model-determined impact: average notches off current rating
5/10 scenario	372 issuers see ratings lowered, including 190 issuers that default	15% of CLO assets are rated ‘CCC+’ and below; average ‘CCC’ bucket increases to 10%; average nonperforming exposure increases to 5%; average par loss of 2.7%	
10/20 scenario	611 issuers see ratings lowered, including 304 issuers that default	30% of CLO assets are rated ‘CCC+’ and below; average ’CCC’ bucket increases to 20%; average nonperforming exposure increases to 10%; average par loss of 5.5%	
15/30 scenario	833 issuers see ratings lowered, including 372 issuers that default	45% of CLO assets are rated ‘CCC+’ and below; average ‘CCC’ bucket increases to 30%; average nonperforming exposure increases to 15%; average par loss of 8.3%	
20/40 scenario	1,038 issuers see ratings lowered, including 440 issuers that default	60% of CLO assets are rated ‘CCC+’ and below; average ‘CCC’’ bucket increases to 40%; average nonperforming exposure increases to 20%; average par loss of 11%	

Source: S&P Global Ratings.

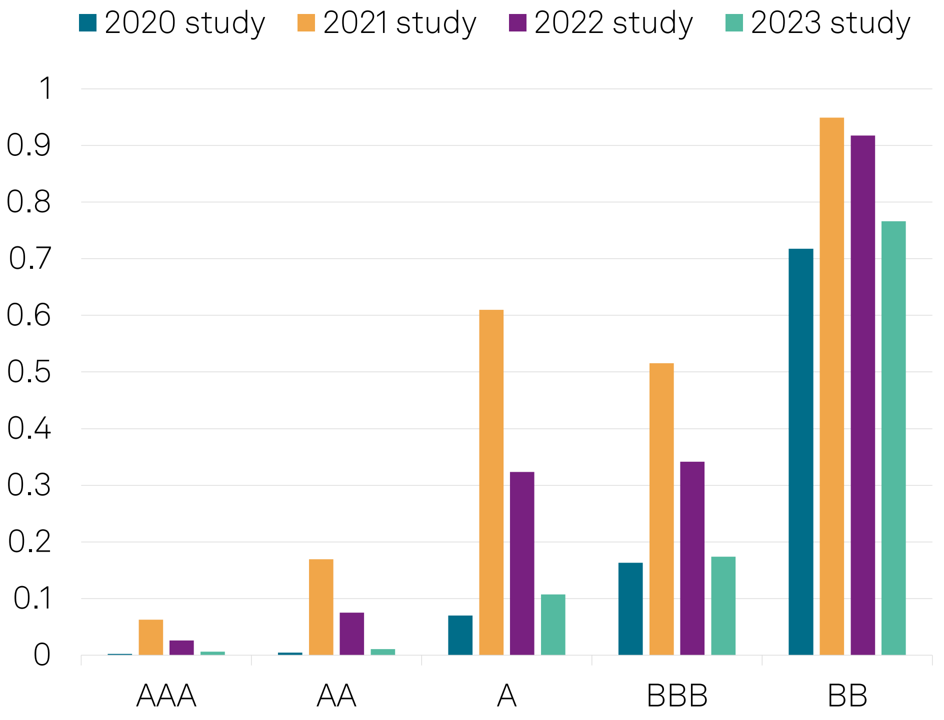
- These four rating stress scenarios are identical to ones we applied for our scenario analyses published in April 2020, June 2021, and August 2022.
- They have the benefit of being transparent and simple, allowing market participants to take their view of potential loan defaults and ‘CCC’ exposure amounts and assess what the potential CLO rating impact might be.
- Producing the same analysis on outstanding CLOs over time also provides insight into how the transactions are evolving and any changes in how they respond to the stresses.
- To achieve the target 'CCC' and default exposures for each of the scenarios, we adjusted the ratings on as many obligors as needed, starting with the weakest (based on rating and then loan price), on average, across our sample of CLOs.
- Note that this can produce CLOs with a range of exposures in the stress analysis (for example, in the "5/10" scenario, some CLOs end up with more than 5% exposure to defaulting loans, and others less, but the average ends up at about 5% across the sample).
- Finally, we assume a 45% recovery rate (or par loss given default of 55%) for the purposes of these four stresses.

U.S. BSL CLOs | Rating Stress Scenarios (2023 Update)

Current rating category	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	≥ -7 (%)	Avg notches	IG (%)	SG (%)	'CCC' (%)	Default (%)
Cash Flow Results Under "5-10" Scenario (2023)													
'AAA'	99.3	0.7							(0.0)	100.0			
'AA'	98.9	1.0	0.1						(0.0)	100.0			
'A'	90.9	6.4	2.6		0.1				(0.1)	100.0			
'BBB'	80.4	17.4	1.8	0.1	0.1	0.1		0.1	(0.2)	83.2	16.8	0.1	
'BB'	49.2	33.2	8.6	4.5	2.1	0.9	0.3	1.2	(0.9)		100.0	3.2	1.2
Cash Flow Results Under "10-20" Scenario (2023)													
'AAA'	87.0	13.0							(0.1)	100.0			
'AA'	76.5	17.4	5.8		0.1	0.1			(0.3)	100.0			
'A'	39.6	23.7	33.1	1.4	1.5	0.5		0.1	(1.0)	99.4	0.6		
'BBB'	20.1	48.9	10.8	8.7	6.5	1.5	1.3	2.2	(1.6)	22.2	77.8	1.6	0.6
'BB'	6.9	13.9	12.8	12.8	11.3	11.0	5.0	26.2	(3.9)		100.0	27.3	25.6
Cash Flow Results Under "15-30" Scenario (2023)													
'AAA'	38.7	61.2	0.1						(0.6)	100.0			
'AA'	22.6	20.3	47.3	4.1	3.3	2.1		0.3	(1.5)	99.8	0.2		
'A'	5.7	4.4	45.3	8.3	17.3	15.2	1.6	2.1	(2.9)	80.8	19.2	0.6	0.1
'BBB'	0.8	10.2	8.9	13.0	15.7	11.0	6.8	33.5	(5.2)	1.9	98.1	16.5	15.7
'BB'	0.6	0.6	0.2	2.4	2.3	3.3	3.9	86.7	(6.7)		100.0	9.8	86.4
Cash Flow Results Under "20-40" Scenario (2023)													
'AAA'	11.1	82.3	4.0	1.2	1.3				(1.0)	100.0			
'AA'	6.2	2.9	31.9	7.3	14.2	31.7	1.8	3.9	(3.4)	98.7	1.3	0.1	
'A'	2.0	0.7	6.8	3.3	11.2	38.7	8.4	28.9	(5.7)	25.0	75.0	3.7	1.9
'BBB'	0.4	0.1	0.8	1.8	3.2	2.8	4.5	86.5	(9.0)	0.6	99.4	15.6	70.3
'BB'	0.5		0.2			0.2	0.2	99.1	(7.0)		100.0	0.2	99.1

Comparison of BSL CLO rating stress test results over the past four years

Average notch downgrade under "5-10" scenario



U.S. BSL CLOs | Related Research

- SF Credit Brief: CLO Insights U.S. BSL Index: CLO 'CCC' Exposures Plateau In October; Manager Performance Metrics Compared, published Oct. 31, 2023
- U.S. BSL CLO Obligors: Corporate Rating Actions Tracker 2023 (As Of Oct. 20), published Oct. 24, 2023
- SLIDES: Middle-Market CLO And Private Credit Quarterly: Strong CLO Growth, But Weakening Underlying Credit (Q4 2023), published Oct. 20, 2023
- Scenario Analysis: How Resilient Are Middle-Market CLO Ratings (2023 Update)?, published Oct. 16, 2023
- U.S. BSL CLO Top Obligors And Industries Report: Third-Quarter 2023, published Oct. 11, 2023
- U.S. And European CLOs: A Comparative Overview, published Aug. 31, 2023
- CLO Spotlight: U.S. CLO Tranche Defaults As Of July 27, 2023, published Aug. 9, 2023
- A Closer Look At Uptier Priming And Asset Drop-Down Provisions In U.S. CLOs, published July 26, 2023
- Scenario Analysis: U.S. BSL CLO Rating Performance Under Four Hypothetical Stress Scenarios (2023 Update), published July 18, 2023
- Default, Transition, and Recovery: 2022 Annual Global Leveraged Loan CLO Default And Rating Transition Study, published May 26, 2023
- Scenario Analysis: How Rising U.S. BSL CLO 'CCC' Baskets Could Affect Junior Overcollateralization Test Cushions, published April 28, 2023
- Credit FAQ: The Potential Impact Of LIBOR Transition On U.S. CLOs, published Feb. 24, 2023
- CLO Spotlight: S&P Global Ratings' Surveillance Process For Monitoring CLO Transactions, published Oct. 14, 2022
- Scenario Analysis: LIBOR Transition, Excess Spread, And U.S. CLO Ratings, published June 30, 2022
- Good Intentions, Limited Impact: ESG-Excluded Sectors Proliferate In U.S. CLO Indentures, published May 16, 2022

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