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U.S. BSL CLO And Leveraged Finance Update:
Steep Rate Climb Erodes Credit Metrics Of Lower-Rated Firms

Q2 2023

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This report does not constitute a rating action

U.S. Leveraged Finance Key Takeaways

Takeaways

- Risks remain weighted to the downside given our current expectations for a very shallow economic downturn in the second and third quarter of 2023 (base scenario), followed by a modest recovery and an extended period with elevated interest rates (with Fed fund rates remaining above 4% until late 2024).
- Downgrades have outpaced upgrades since May for U.S. and Canadian leveraged finance credits, with the pace of downgrades quickening since August. There are wide dispersions of credit risk within rating bands, especially in the 'B-' category.
- Cash flow deficits are our most significant concern for lower-rated credits given expectations of higher interest rates for longer. On a trailing basis, more than half of 'B-' issuers have cash flow deficits.
- U.S. corporate debt maturities remain manageable over the next year or so. However, ratings pressure will increase 12-18 months before maturity, especially if financing conditions remain challenging.
- Estimated actual average recoveries on first-lien debt have declined in recent years and mostly sit below the long-term historical average of 75%-80%. Our average expectations for future first-lien recoveries is 64%, with lower expectations on companies rated 'B' and lower. Further, out-of-court restructurings are likely to push many first-lien recoveries lower and increase dispersion.
- We expect trailing-12-month default rates to increase in coming quarters:
  - Speculative-grade default forecast: base case of 4.25% (versus historical average of 4.1%) by March 2024; and
  - Morningstar-LSTA U.S. Leveraged Loan Index (LLI) default forecast: base case of 2.5% (at the same level as the historical average of 2.5%) by December 2023.

U.S. Leveraged Finance Key Takeaways

Risks

- A prolonged period of low economic growth and high interest rates results in liquidity shortfalls: Interest rates may remain higher for longer amid weak economic conditions and ongoing inflationary pressure, which may strain cash flow and liquidity for highly indebted borrowers and make refinancing more difficult.
- Aggressive debt exchanges become common: Weak credit documentation, low debt trading prices, falling business valuations, and evolving market practices for out-of-court restructurings could incentivize financial sponsors to utilize broad debt agreement flexibility to protect their investments, to the detriment of existing lenders.
- Cost inflation, supply issues, and labor constraints become embedded: Inflation has proven persistent amid various disruptions and operating challenges (i.e., the Russia-Ukraine conflict, high energy and labor prices, geopolitical tensions, redesigned supply chains, and COVID-19-driven shutdowns).

U.S. CLO Key Takeaways

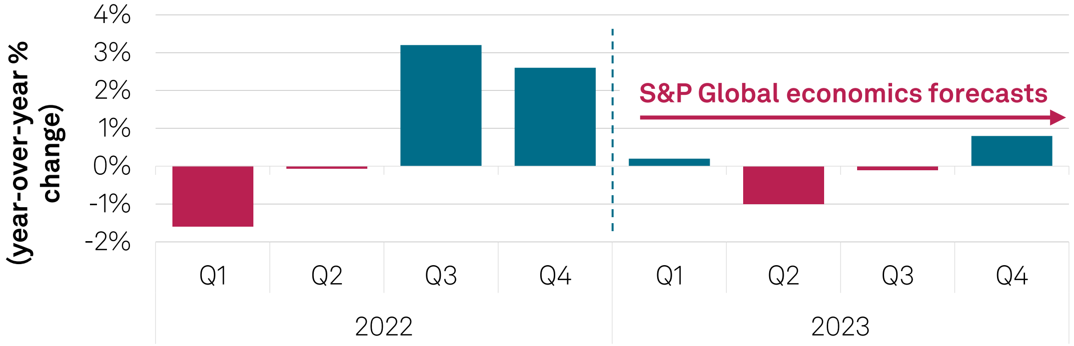
- Corporate ratings downgrades continue to outnumber upgrades and are moderately impacting U.S. broadly syndicated loan (BSL) collateralized loan obligation (CLO) collateral pools (see slide 28). The S&P Global Ratings' weighted average rating factor (SPWARF) for the average BSL CLO, a measure of the asset ratings composition of CLO portfolios, has deteriorated modestly but steadily over the past year to 2780 from about 2700 a year ago (see slide 23).
- Loans from issuers rated 'B-' now comprise nearly 31% of total U.S. BSL CLO portfolios, up from less than 13% at the end of 2017 (see slide 24). This roughly mirrors changes in the U.S. leveraged loan market over the same period, with a majority of the new 'B-' companies holding that rating from the outset rather than getting there by way of downgrade from a higher rating level. This shift in how companies get to 'B-' could be a mitigating factor to the increased exposure, with companies starting life at 'B-' less likely to see downgrades than companies with ratings lowered to 'B-' from a higher rating (slide 25).
- The average BSL CLO 'CCC' basket has crept up to 5.76%, from a low of 3.68% in August of 2022, as more companies see ratings lowered into the 'CCC' range, still well shy of the 7.50% threshold at which 'CCC' assets start to see haircuts for the purpose of calculating the CLO overcollateralization (O/C) ratios. Additionally, the average CLO junior O/C ratio test has built up a healthy cushion (4.28%) before it starts to fail. Stress scenarios we published suggest that the average BSL CLO junior OC test could withstand 'CCC' baskets rising into the mid-teens before failing (see slides 32 and 33).
- Obligors in BSL CLO collateral pools with a negative rating bias (corporate ratings on outlook negative or CreditWatch negative) continue to creep upward, increasing to 17.6% from about 11.0% a year ago. This points to a turn in the credit environment since the middle of last year. We view negative ratings bias as an important forward-looking credit indicator of potential shifts in CLO collateral credit quality.

U.S. CLO Key Takeaways

- The software and health care providers and services sectors are the two largest industry categories in BSL CLO transactions, with 11.5% and 6.7% of total assets, respectively. They also have the highest proportion of loans trading below 80% (see slide 26).
- Despite the shift in the corporate credit environment and increase in downgrades, our outlook for CLO ratings in 2023 remains fairly benign. Under our base-case economic forecast, we think only modest U.S. CLO downgrades are likely, due to protections afforded by CLO structural features, active management of collateral, and current CLO tranche rating cushions. Downgrades seem most likely for subordinate tranche ratings of pre-pandemic CLOs that are already showing some signs of collateral stress.
- If the economy performs worse than our base case, CLO rating transitions could increase, but we still think downgrades would be limited to a modest number of 'BBB' and below rated tranches.
- The LIBOR deadline at the end of June is fast approaching, and transition activity in the corporate loan and CLO markets is picking up. So far, however, the progress of transition to SOFR for legacy transactions has been modest. Less than 40% of corporate loans are indexed to SOFR, and fewer than 50 legacy CLO transactions have made the transition away from Libor. There is a lot of work to be done, and there could be operational challenges in handling the volume. But we think the CLO rating impact will be very limited – see the LIBOR rating stress article we published in June 2022 ("Scenario Analysis: LIBOR Transition, Excess Spread, And U.S. CLO Ratings," published June 30, 2022).

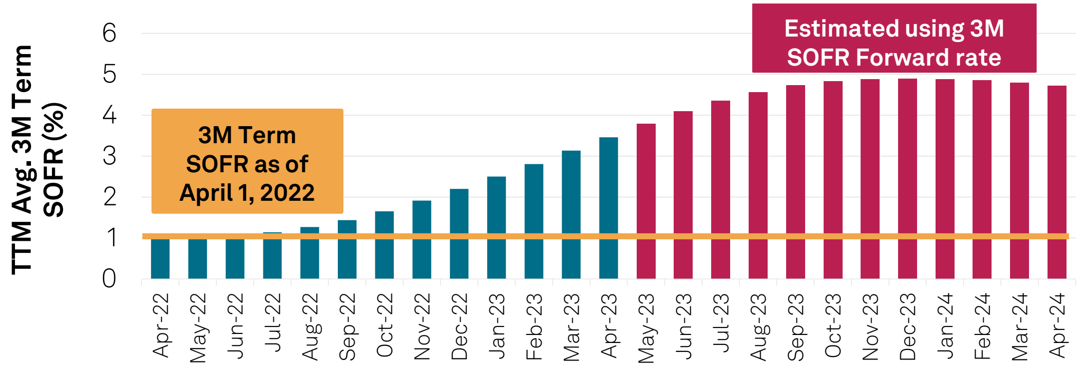
U.S. Leveraged Finance | What We Are Watching In Mid-2023

1. The depth and persistence of economic slowdown



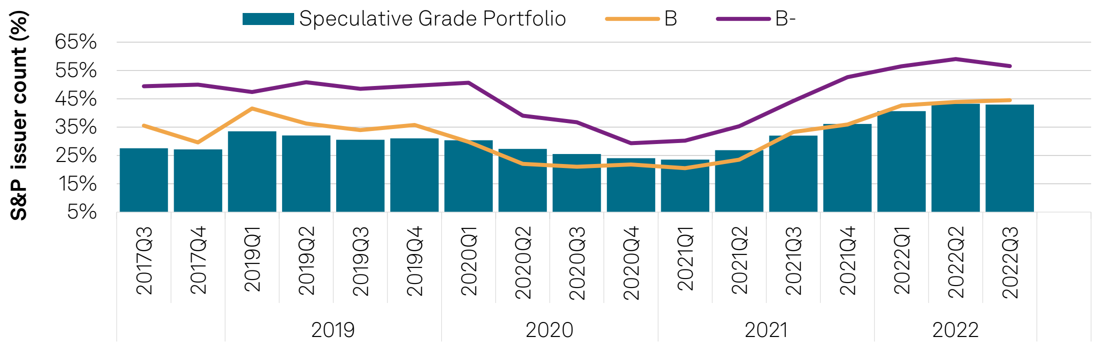
Source: BEA and S&P Global.

2. LTM benchmark rate increases yet to fully hit FOCF



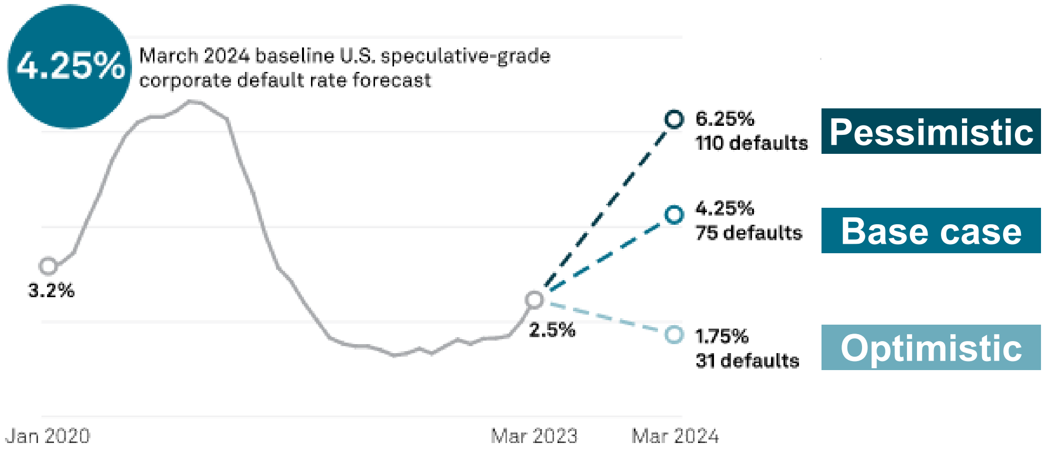
3. Higher-for-longer rates a concern for low rated firms

% Of speculative-grade issuers with negative FOCF



Source: S&P Global Ratings.

4. Speculative-grade default forecast (March 2023)



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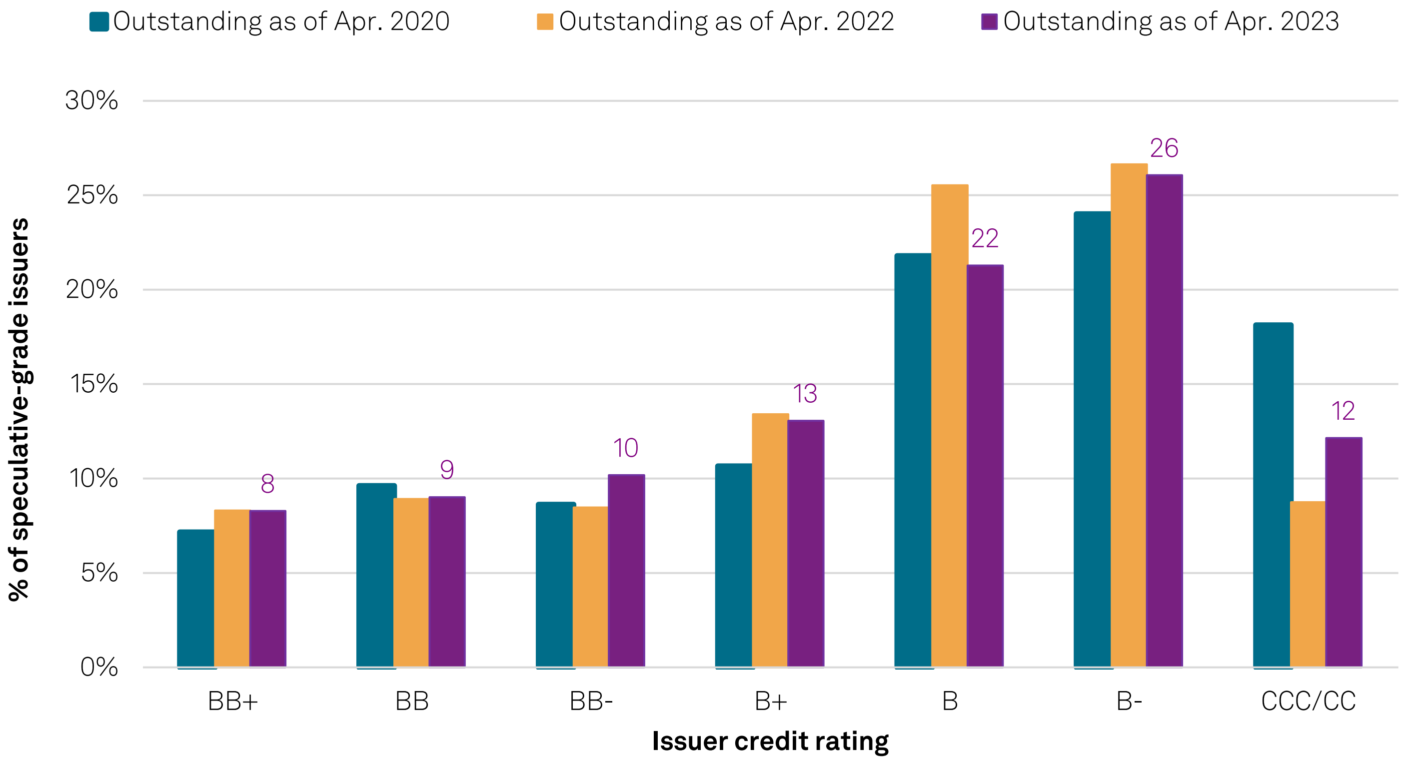
U.S. Leveraged Finance | Ratings Remain Concentrated At Low Levels; A Mild Economic Recession In 2023 Will Continue To Pressure 'B' And Lower Ratings

Spec.-Grade ratings distribution by issuer credit rating: U.S. And Canada

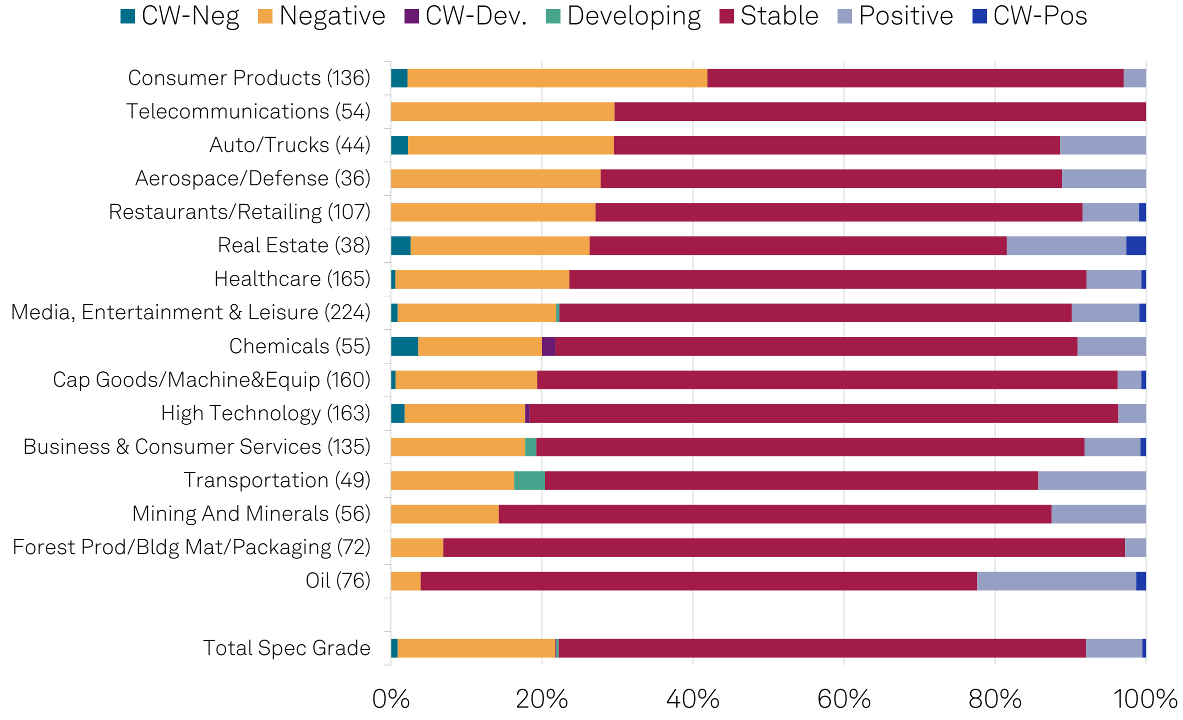


Note: U.S. and Canada corporate ratings. Source: S&P Global Ratings and CreditPro.

- About 60% of our speculative-grade issuer ratings are concentrated at 'B' and lower.
- Using the historical average of 'B' and 'B-' annual downgrade transition rates to the 'CCC' category, the percent of companies rated 'CCC+' and lower could expand by 5%-6%.
- This would put the proportion of 'CCC' category rated issuers in the 15%-17% range by year-end 2023, which is below the COVID peak of 18.7% but higher than the global financial crisis peak of 13.9%

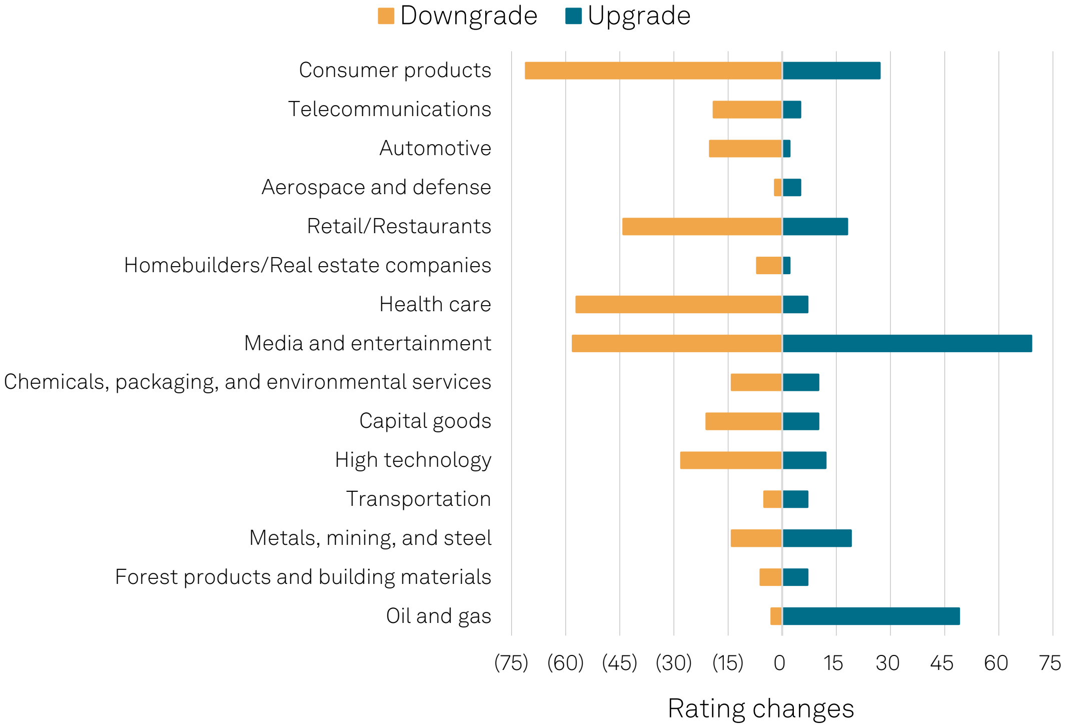
U.S. Leveraged Finance | Increased Negative Ratings Bias Highlights Growing Downgrade Risk

Spec.-Grade rating outlook by sector: U.S. And Canada (as of May 2023)



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

Spec.-grade ICR changes by sector: U.S. And Canada (Jan. 2022 through April 2023)



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

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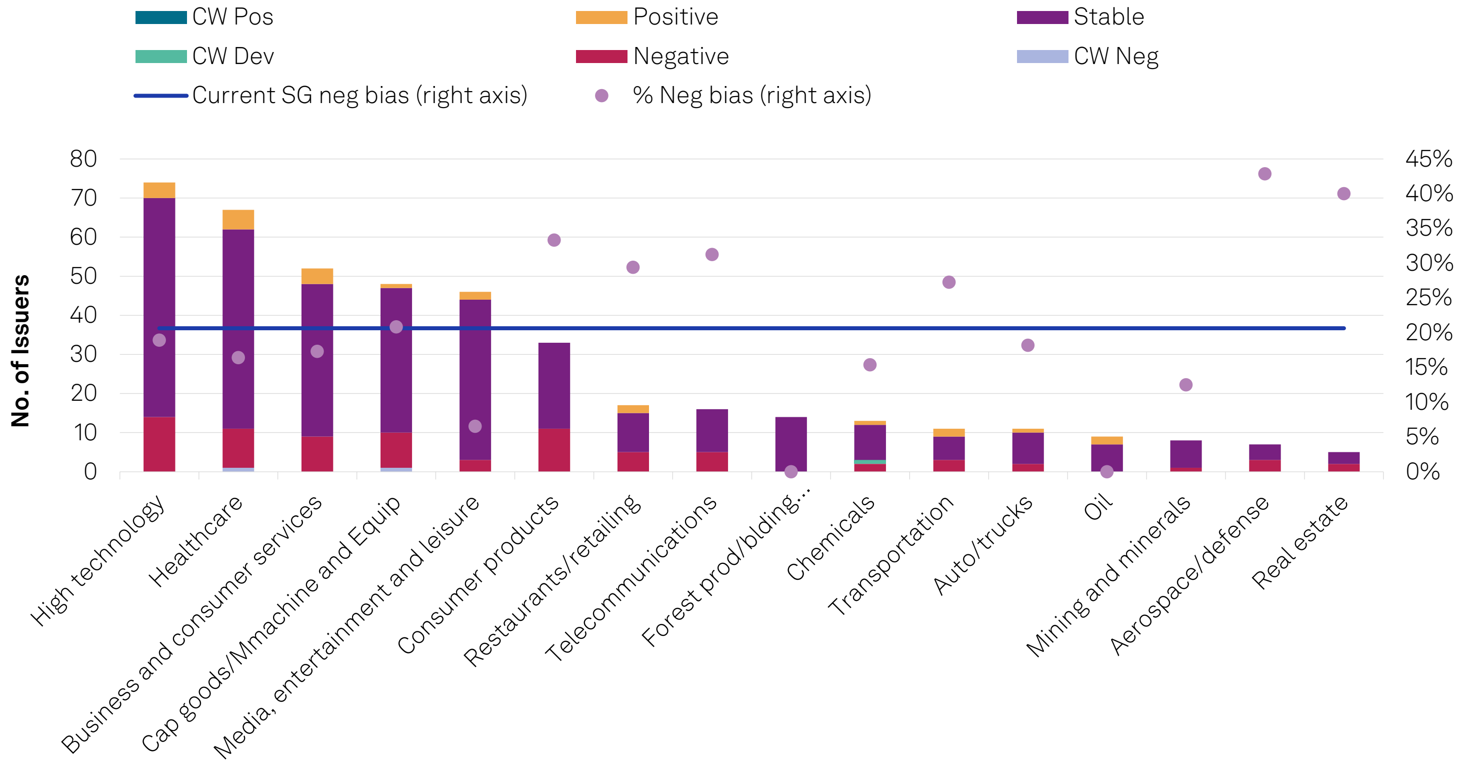
U.S. Leveraged Finance | ‘B-’ Downgrade Risk Can Vary Widely By Sector

Ratings bias of companies rated ‘B-’ by sector

U.S. and Canadian nonfinancial corporates



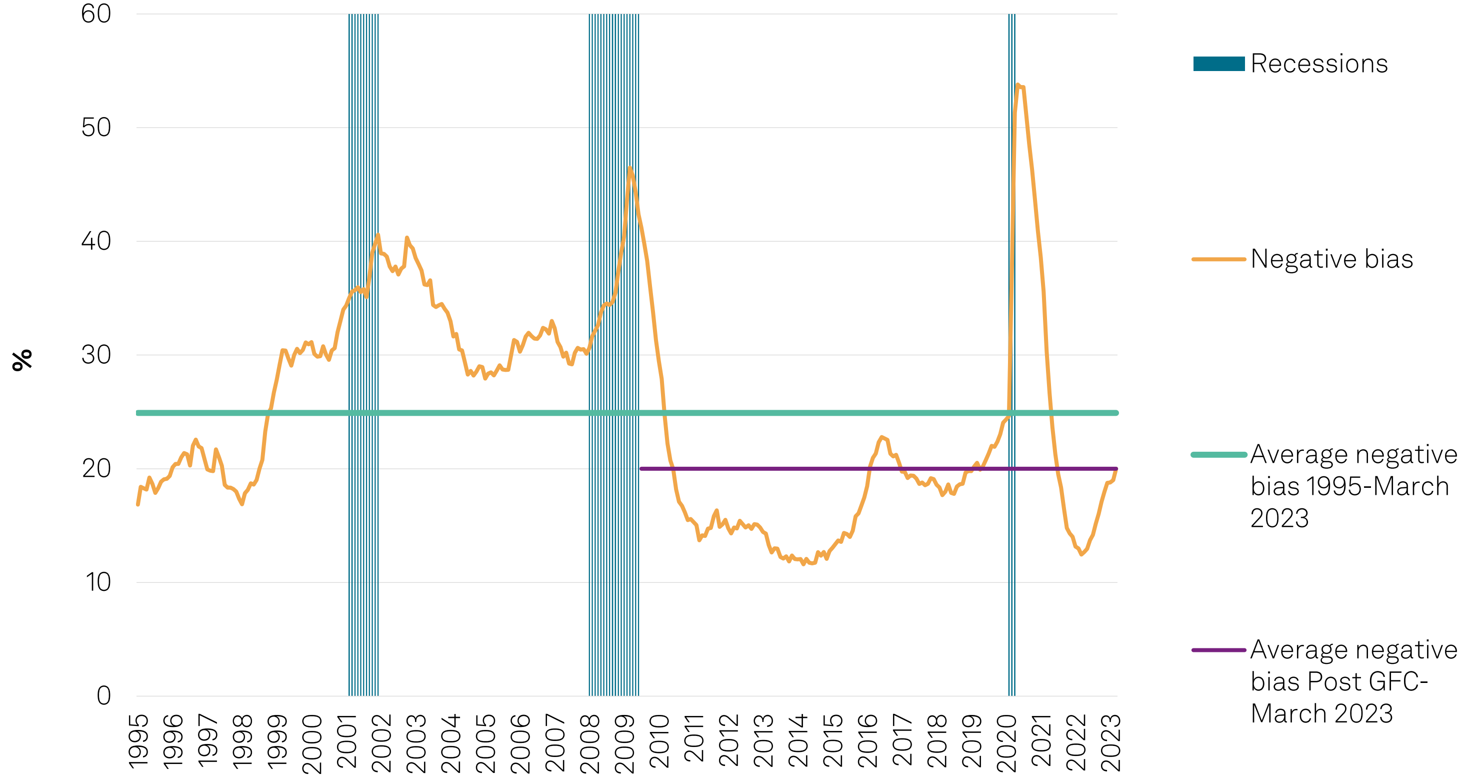
Data as of May 1, 2023. Source: S&P Global Ratings Credit Research & Insights.

- On a corporate speculative-grade rating an outlook negative is intended to signal at least a 1-in-3 chance of a downgrade within the next 12 months.
- The majority of ‘B-’ rated companies have a ‘stable’ outlook, and modestly lower from the start of the year.
- The negative bias for ‘B-’ rated companies for many cyclical sectors are above the current speculative-grade average.
- Of the six sectors with an above average negative outlook, the consumer products and real estate sectors are significantly higher than the average.

U.S. Leveraged Finance | Spec-Grade Negative Bias Increases To Post-GFC Average

Speculative-grade negative ratings bias

U.S. And Canadian nonfinancial corporates



- The negative bias for speculative-grade corporates has increased steadily since March 2022.
- The speculative-grade negative bias now sits at the post global financial crisis (GFC) average of roughly 20% but is still below the long-term average from 1995 through March 2023.
- Even so, continued pressure from slowing economic growth and the burden of sharply higher debt servicing costs is likely to keep upward pressure on negative bias.

Data as of March 31, 2023, Source: S&P Global Ratings Credit Research & Insights.

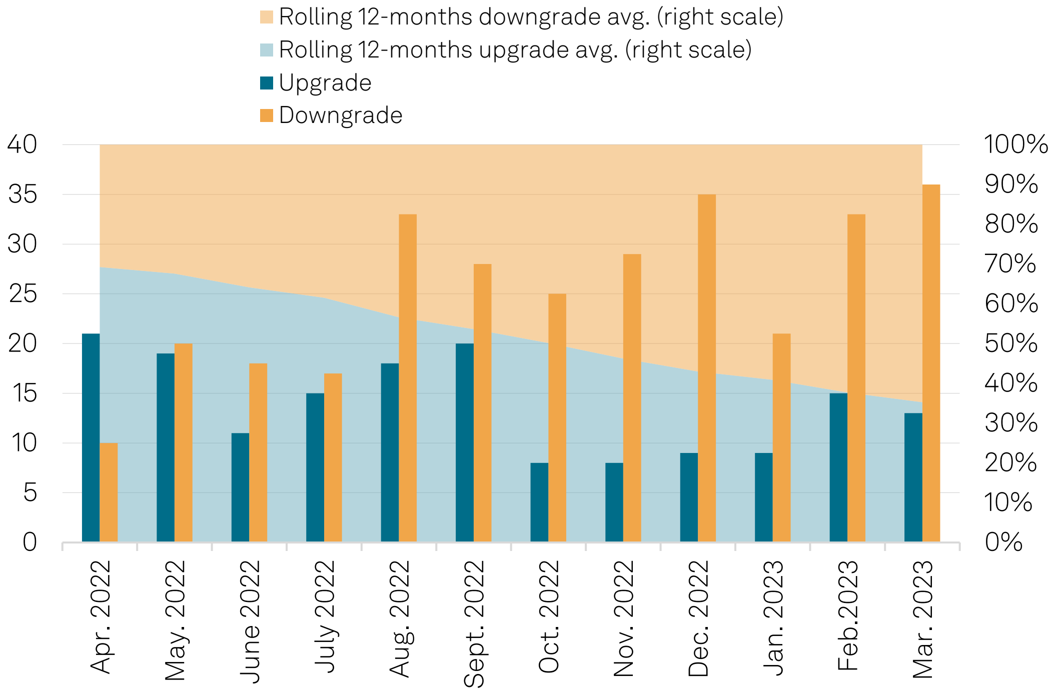
U.S. Leveraged Finance | Credit Trends Turn Negative As Economic Tailwinds Flag And Headwinds Mount

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

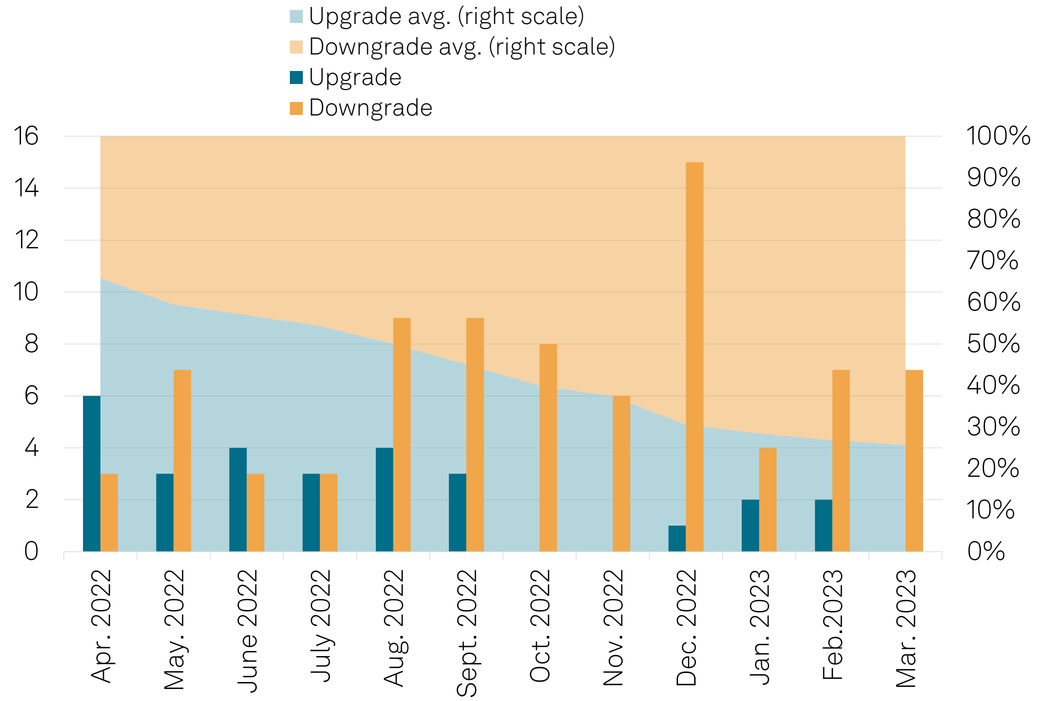
Downgrades: Median leverage for companies downgraded to the 'CCC' category rose to 15.5x as EBITDA all but dried up (vs. 8.0x for entities rated ‘B-’). Downgraded firms also had more severe and persistent free operating cash flow deficits.

Upgrades: Firms upgraded from the ‘CCC’ category generally had better credit statistics than the cohort of ‘B-’ companies in which ratings remained static.

Speculative-grade upgrades and downgrades



Ratings coming into/out of ‘CCC’/‘CC’ categories



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.

U.S. Leveraged Finance | Earnings Growth Slows; Cash Flow Generation Falls

Preliminary: Statistics subject to change as entity counts move closer to 1000 (reduced counts are highest for lower rated issuers)

Speculative-grade earnings growth (U.S. and Canada)

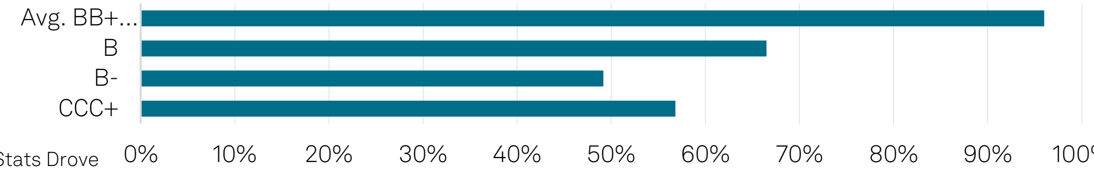
		Median EBITDA growth, reported last 12 months							
Industry	Entity count	12-month ended on Mar. 31, 2021 (qoq)	12-month ended on Jun. 30, 2021 (qoq)	12-month ended on Sep. 30, 2021 (qoq)	12-month ended on Dec. 31, 2021 (qoq)	12-month ended on Mar. 31, 2022 (qoq)	12-month ended on Jun. 30, 2022 (qoq)	12-month ended on Sep. 30, 2022 (qoq)	12-month ended on Dec. 31, 2022 (qoq)
Aerospace/defense	17	-2.0%	9.9%	3.7%	7.6%	-1.2%	-0.3%	1.5%	1.9%
Auto/trucks	20	18.7%	29.5%	5.0%	8.1%	5.7%	4.9%	1.9%	3.7%
Business and consumer services	45	3.0%	7.1%	2.7%	2.7%	2.7%	3.5%	1.4%	0.0%
Cap goods/machine and equipment	76	4.1%	3.9%	0.9%	0.5%	2.7%	4.0%	5.2%	3.8%
Chemicals	19	10.3%	9.7%	10.0%	4.9%	5.1%	3.1%	-3.2%	-6.3%
Consumer products	66	6.2%	8.6%	1.9%	0.7%	-1.6%	1.5%	0.0%	0.1%
Forest products/bldg mat/packaging	34	7.7%	10.8%	2.0%	0.6%	8.5%	10.2%	3.9%	1.6%
Healthcare	49	9.1%	6.4%	3.0%	0.9%	-2.6%	-1.7%	-2.2%	-1.6%
Media, entertainment, and leisure	121	3.2%	27.6%	10.8%	5.8%	4.7%	3.0%	1.3%	2.4%
Mining and minerals	40	8.1%	22.3%	13.1%	12.1%	12.3%	6.5%	-0.9%	-7.9%
Oil and gas	60	7.4%	38.0%	28.1%	36.3%	18.7%	27.7%	18.0%	6.5%
Restaurants/retailing	69	6.7%	30.3%	2.7%	5.1%	0.5%	-0.6%	-0.9%	0.0%
Real estate	19	3.4%	6.9%	4.8%	5.4%	4.4%	5.4%	4.4%	2.7%
Technology	67	6.6%	4.9%	5.1%	2.9%	2.6%	0.2%	0.2%	1.5%
Telecommunications	33	2.3%	2.7%	1.2%	0.0%	0.1%	-2.2%	-1.3%	-0.1%
Transportation	20	-8.0%	32.3%	22.8%	19.9%	1.5%	1.0%	3.1%	2.6%
Total	755	5.0%	11.6%	5.2%	4.3%	3.1%	2.9%	1.5%	1.1%

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

		Median free operating cash flow to debt (%), reported last 12 months							
Issuer Credit Rating*	Entity count	12-month ended on Dec. 31, 2019	12-month ended on Dec. 31, 2020	12-month ended on Mar. 31, 2021	12-month ended on Jun. 30, 2021	12-month ended on Sep. 30, 2021	12-month ended on Dec. 31, 2021	12-month ended on Mar. 31, 2022	12-month ended on Jun. 30, 2022
BB+	101	12.4	17.9	21.9	20.8	20.1	18.7	16.9	12.9
BB	115	13.2	16.4	16.4	17.2	17.2	14.4	14.5	12.4
BB-	93	10.1	15.2	18.2	14.7	13.4	11.5	8.8	9.1
B+	138	6.6	7.7	7.9	8.5	8.7	7.7	6.3	6.3
B	127	4.4	5.7	6.3	5.1	1.7	3.3	1.4	2.0
B-	117	1.8	3.5	2.3	2.1	0.8	0.9	0.9	-0.2
CCC+	50	-3.0	0.3	1.2	-1.4	-2.4	-3.3	-4.5	-5.5
CCC	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
CCC-	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
CC	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
Total	755	6.4	8.2	8.6	8.6	7.5	6.4	5.9	5.1

Lower entity counts (vs. our “Q4 2022 LevFin Quarterly Update,” published Feb. 7, 2023, which had 1,020 entities)--based on delayed reporting for smaller, private firms--are highest for firms rated of ‘B’ and lower, which skews credit statistics for the latest dataset, since lower-rated firms generally have worse statistics.

Entity count % by ICR vs. prior quarterly report



* 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. N..M.—Not meaningful. Source: S&P Global Ratings U.S. and Canada ratings.

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

‘B’ and ‘B-’ rated companies could see a 60-80 basis points (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%

- We expect the realized quarter-over-quarter (QoQ) impact of higher interest rates to jump to more than 10% in the fourth quarter of 2022 and about 7.7% in the first quarter of 2023.
- In our 2023 stress scenario analysis, we estimate median interest coverage ratios for 'B' and 'B-' issuers could fall by about 0.52x to 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.

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

U.S. Leveraged Finance | 'B' And 'B-' Issuers Could See A 0.50x-0.75x Decline In Reported EBITDA Interest Coverage By Year-End

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

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

Reported EBITDA margin stress

Benchmark rate (3-month LIBOR or SOFR)

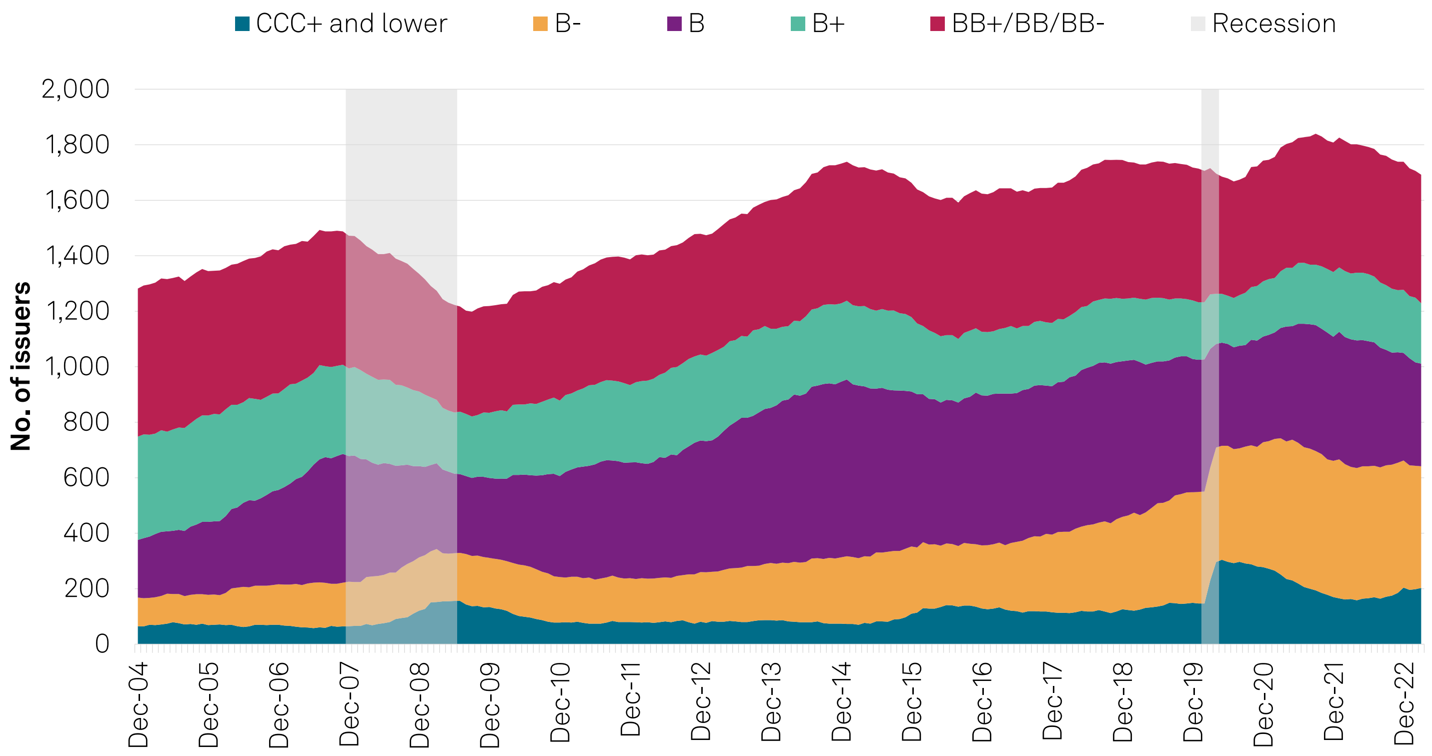
	15%	10%	5%	0%	-5%	-10%	-15%
Sample Size: 820	(16.5% median margin)	(15.8%)	(15%)	(14.4%)	(13.6%)	(12.9%)	(12.2%)
1.1% (LTM 3Q22)	2.55x	2.43x	2.32x	2.21x LTM	2.10x	1.99x	1.88x
2.8% (annualized 3Q22)	2.19x	2.10x	2.00x	1.91x	1.81x	1.71x	1.62x
3%	2.14x	2.04x	1.95x	1.86x	1.76x	1.67x	1.58x
4%	1.95x	1.86x	1.78x	1.69x	1.61x	1.53x	1.44x
5%	1.78x	1.70x	1.63x	1.55x	1.47x	1.39x	1.32x
6%	1.64x	1.57x	1.50x	1.43x	1.36x	1.29x	1.21x

- Issuers rated 'B' and 'B-' are highly exposed to unhedged floating-rate debt obligations, and thus could see 60 basis points (bps)-80 bps increases in interest costs for every 100 bps in higher benchmark interest rates.
- 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 September 30, 2022, 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: S&P Global Ratings. Source: New Study Finds U.S. Speculative-Grade Issuers Most Vulnerable To Higher-For-Longer Interest Rate Environment.

U.S. Leveraged Finance | Expansion Of Rated Universe At Bottom Rungs Is A Long-Term Trend

U.S. And Canada nonfinancial corporate issuer count by spec.-Grade rating category (through Mar. 31, 2023)



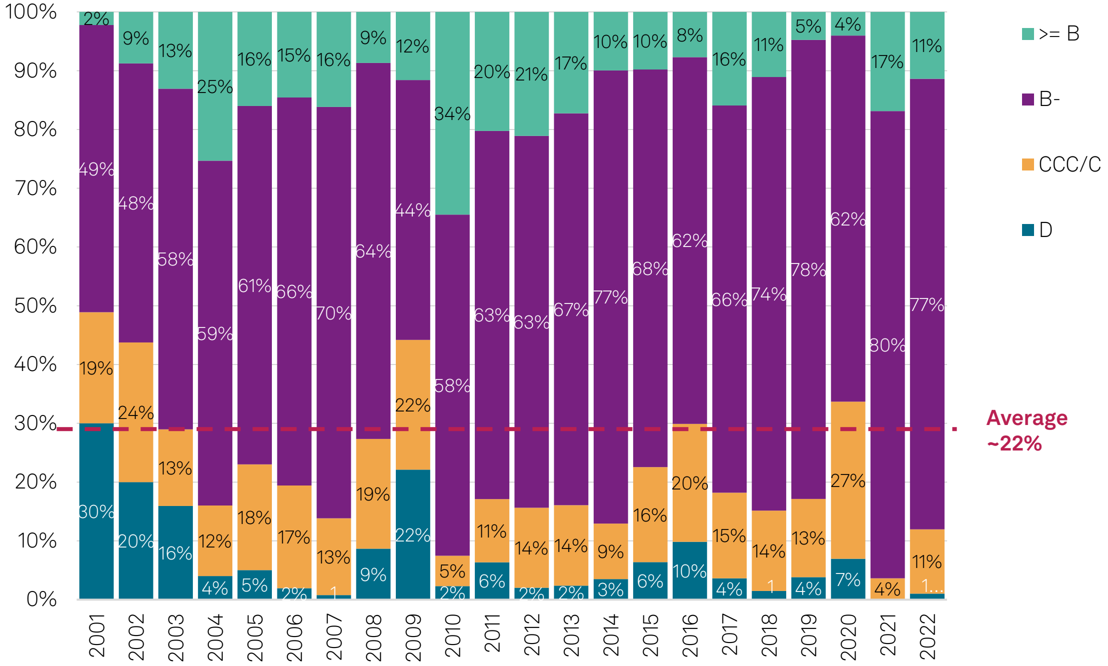
Data as of March 31, 2022. Source: S&P Global Ratings.

- **Speculative-grade ratings are skewed to 'B' and 'B-',** which now account for roughly half of the portfolio, up materially since the end of the GFC.
- **Issuers rated 'CCC+' and below have increased to almost 12% but remain lower than the roughly 16% from December 2020.** The median proportion of this population over the 18-year period is 6.6%.
- **More than half of current 'B-' issuers had a 'B-' initial rating,** highlighting increasing accommodating financing conditions and higher debt leverage in recent years.

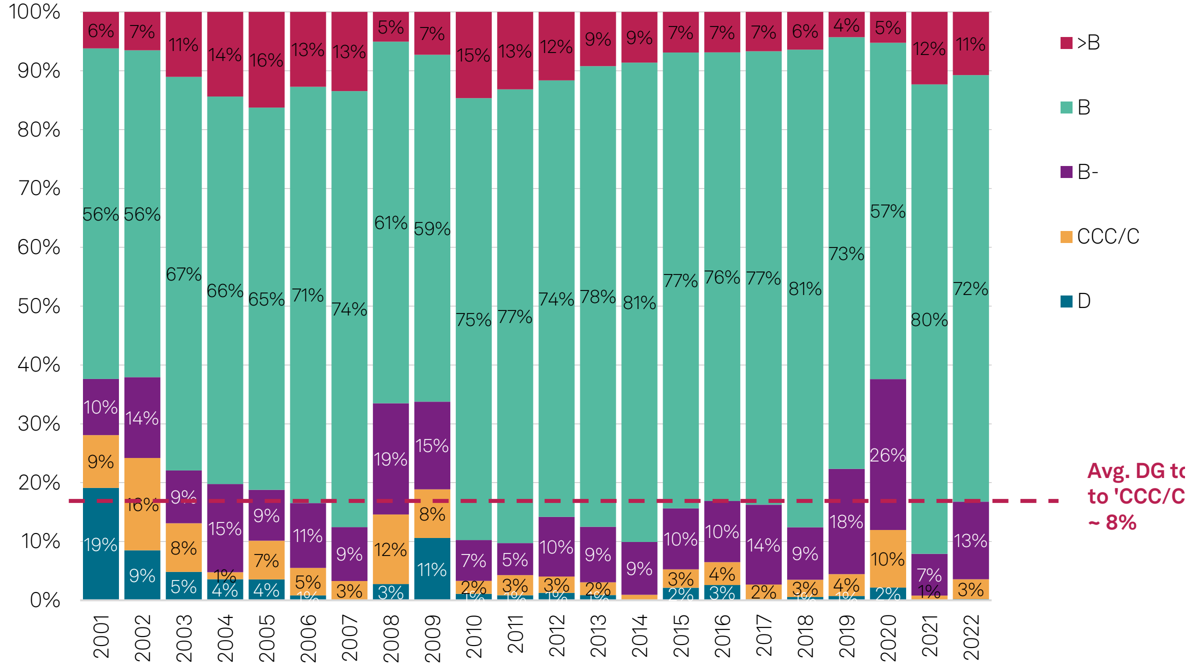
U.S. Leveraged Finance | Downgrades To ‘CCC’ Range Spike In Recessions

- 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.

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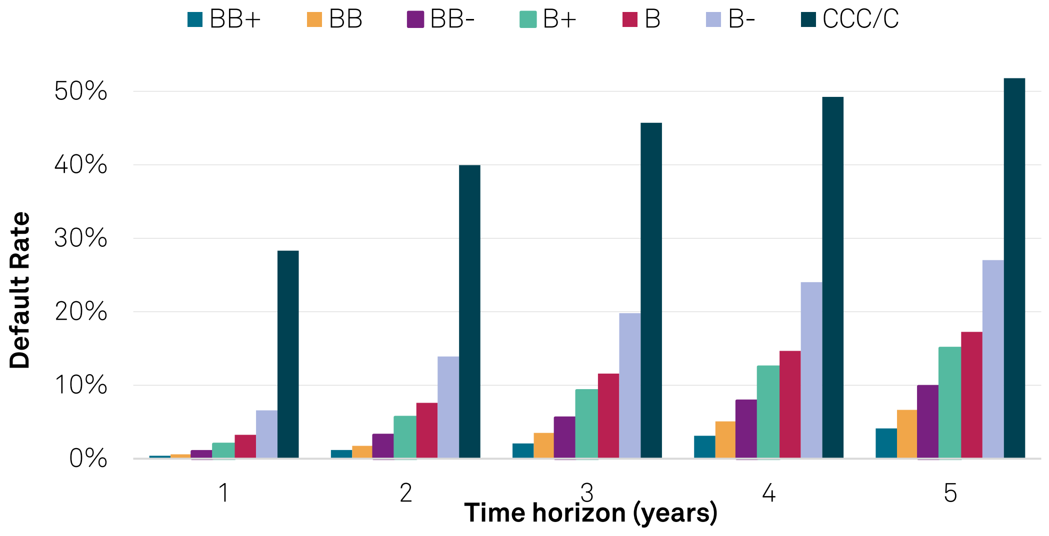
U.S. Leveraged Finance | 'CCC' Rated Companies Have Higher Default Risk

- Companies rated 'CCC+' or lower are viewed 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 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 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

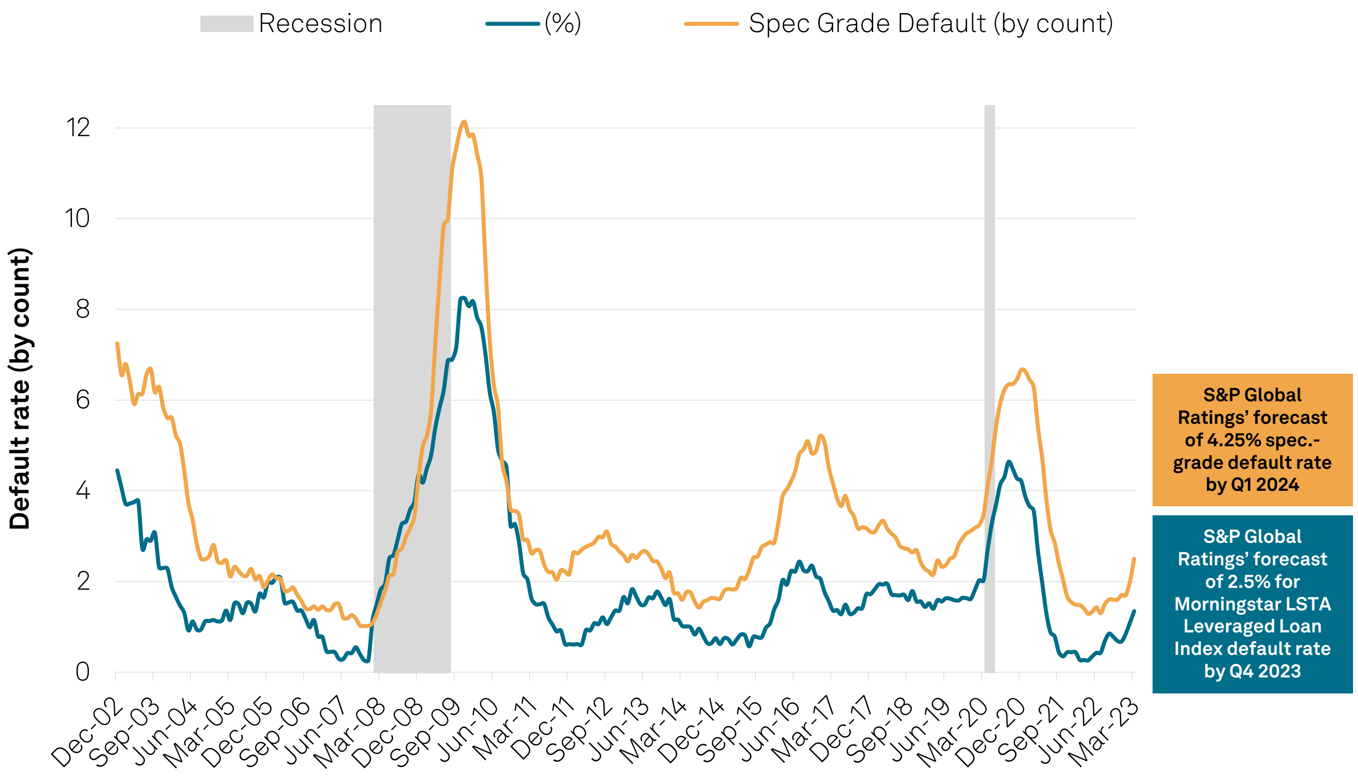
Average Three-Year U.S. Corporate Cumulative Default Rates (by Issuer Credit Ratings or ICRs): 'BB-categories' 4.05%; 'B-categories' 12.16% 'CCC/C-categories' 45.73%. Sources: 2021 Annual U.S. Corporate Default And Rating Transition Study, May 11, 2021. Source: S&P Global Ratin

Average cumulative default rates for spec-grade U.S. corporates by issuer rating : 1981–2021



U.S. Leveraged Finance | Spec.-Grade Defaults Could Reach 4.25% (By March 2024); LSTA Loan Index Defaults Could Reach 2.5% (by December 2023)

LTM default rates (including estimates through Dec. 2023)



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 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 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.

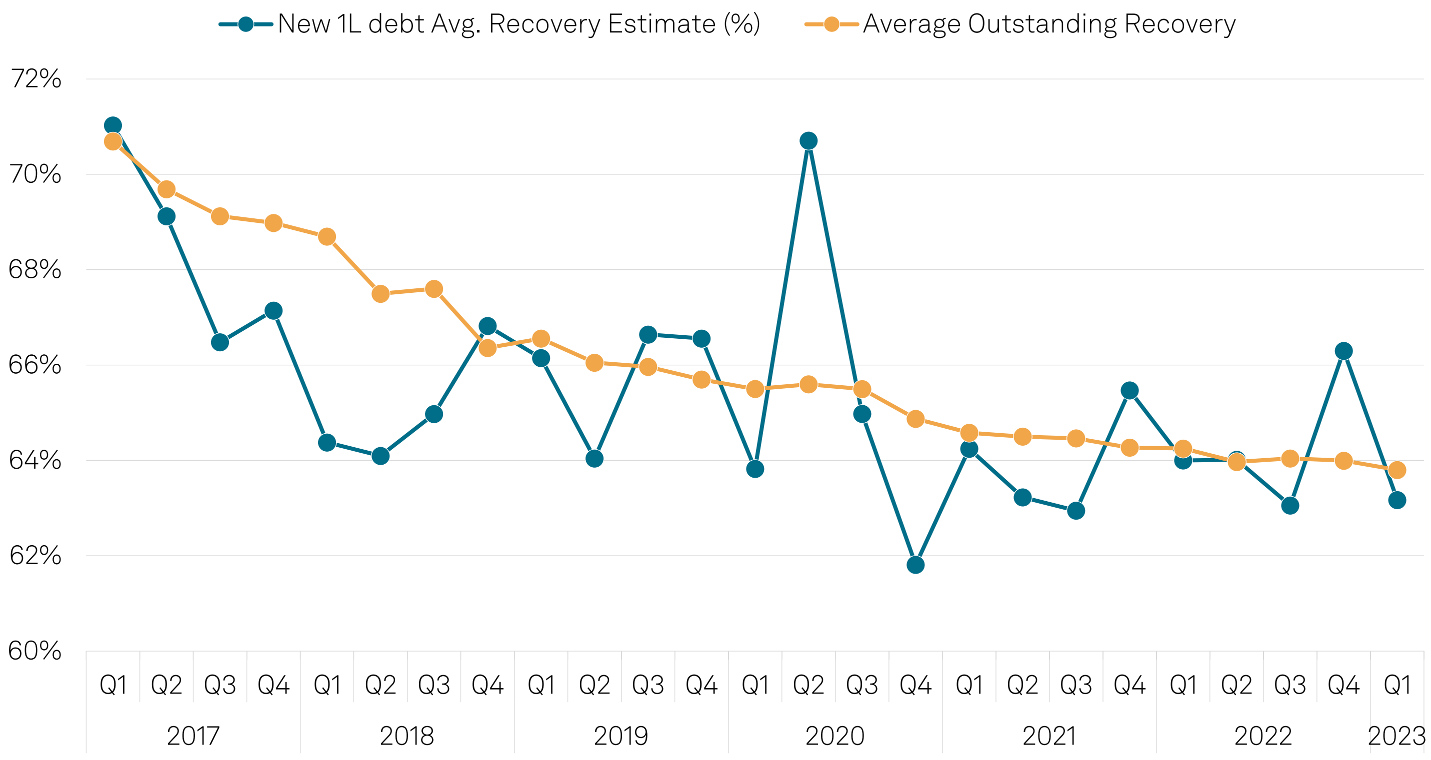
Forward-view: Default risks are increasing

- For the U.S., our speculative-grade default forecast (issuer count) for March 2023 is 4.25% (base case; range 1.75%-6.25%).
- For the Morningstar LSTA Leveraged Loan Index, our default rate forecast (issuer count) for Dec. 2023 is 2.50% (base case; range 1.25%-4.50%).

Measures of LLI defaults exclude nonloan defaults and selective defaults. LTM--Last 12 months. Sources: Default, Transition, and Recovery: Global Corporate Default articles. https://www.capitaliq.com/CIQDotNet/CreditResearch/SPResearch.aspx?DocumentId=51666471&From=SNP_CRS.

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)

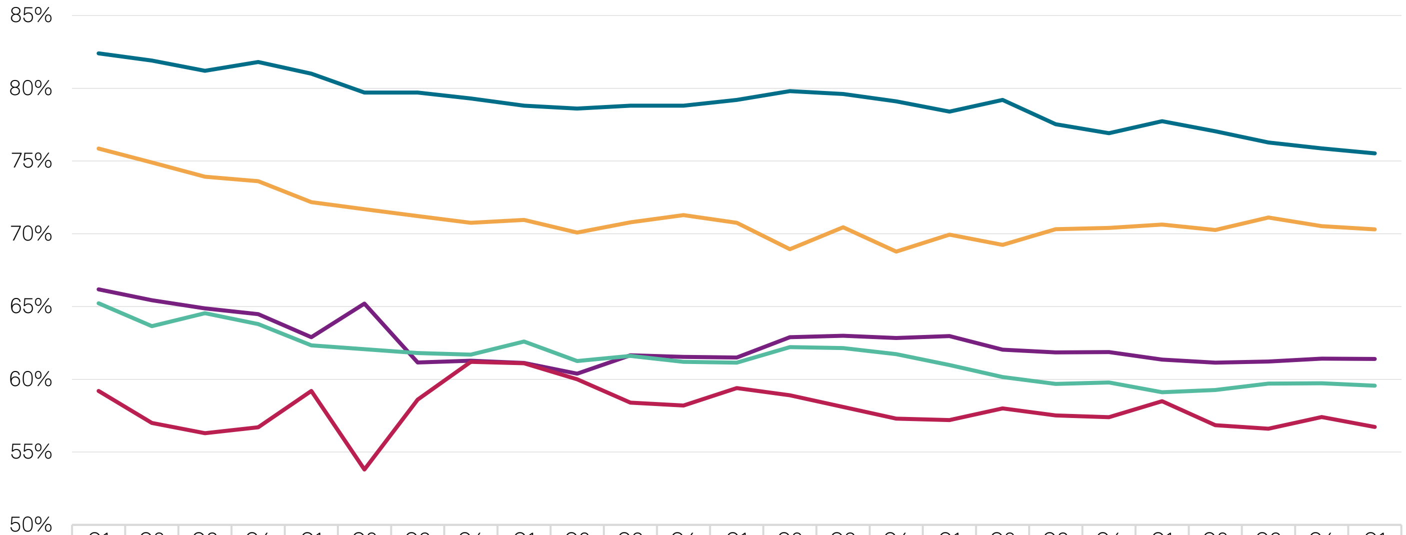


Data through Dec. 31, 2022, based on the rounded point-estimates included in our recovery ratings for rated nonfinancial corporate entities in the U.S. and Canada. Source: S&P Global Ratings.

- 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 mostly sit at the low end of the historical range. Out-of-court restructurings are likely to push first-lien recoveries down and dispersion up.
- Additionally, average actual first-lien recovery rates in recent years have been lower and significantly variable.
- **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 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
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%
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%
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%
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%
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%

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

Data through Mar. 31, 2022, 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.

S&P Global
Ratings

U.S. Leveraged Finance | Aggressive Loan Restructurings Generally Have A Sharp Impairment On Recoveries

Comparison of the expected recovery impairment from select loan restructurings

	Collateral Transfers:	Dates	RR% before	RR% after	Change 1L % par		Priming Loan Exchanges:	Dates	RR% before	RR% after	Change 1L % par
1	J.Crew	7/2017	40%	15%	-25%	1	Murray Energy	6/2018	65%	0%	-65%
2	PetSmart	6/2018	60%	45%	-15%	2	NPC International Inc.	2/2020	55%	40%	-15%
3	Neiman Marcus	9/2019	55%	55%	0%	3	Serta Simmons	6/2020	55%	5%	-50%
4	Cirque du Soleil	3/2020	75%	75%	0%	4	Renfro #1	7/2020	35%	20%	-15%
5	Revlon	5/2020	40%	15%	-25%	5	Boardriders	8/2020	55%	5%	-50%
6	Party City	7/2020	75%	45%	-30%	6	TriMark/TMK Hawk #1	9/2020	55%	0%	-55%
7	Travelport (+priming loan)	9/2020	75%	0%	-75%	7	GTT	12/2020	50%	40%	-10%
8	Envision Healthcare	4/2022	50%	30%	-20%	8	Renfro #2	2/2021	20%	10%	-10%
						9	TriMark/TMK Hawk #2	7/2022	60%	30%	-30%
						10	Medical Depot	7/2022	15%	10%	-5%
						11	Envision Healthcare	8/2022	30%	varied	up to -30%
						12	Mitel Networks International (Ltd)	11/2022	50%	5%	-45%

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 the transactions are public.

U.S. Leveraged Finance | Related Research

- 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. BSL CLOs | Most CLO Metrics Continue To Erode

- The CLO Insights U.S. BSL Index tracks (as of May 2023) 535 S&P Global Ratings-rated U.S. BSL CLOs across 111 different CLO managers that have been in their reinvestment periods and issuing monthly reports for at least 12 months. New transactions are added when they meet this threshold, and transactions are removed when they exit their reinvestment periods.
- Exposure to obligors with ‘CCC’ ratings have increased to 5.76% up from a post-pandemic low of 3.68% in August 2022.
- Assets from ‘B-’ rated companies have continued to increase, reaching 30.86% of BSL CLO assets as of May 1, 2023. About 17.5% of these ‘B-’ ratings have a negative outlook--around the same proportion as total CLO assets from obligors with ratings with a negative outlook (17.14%).
- The proportion of BSL CLO ratings with a negative bias (negative outlook or CreditWatch Negative) continues to creep upward, reaching 17.6% as of May 1, 2023, up from 16.8% the month before.
- CLO junior O/C test cushions have built up a solid cushion since Q3 2020 but have declined in 2023 as exposure to obligors with a nonperforming ratings has increased to 0.70%.

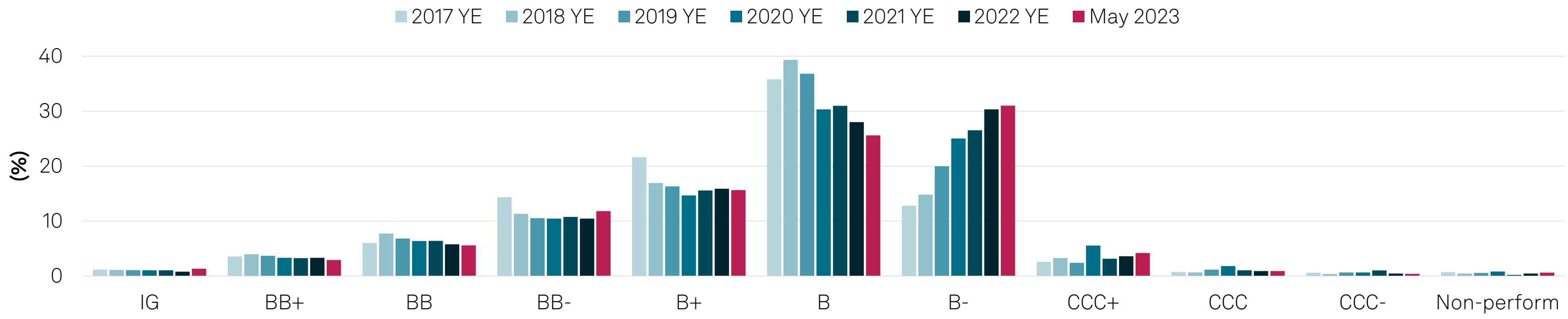
Note: As of May 2023, the method used to determine which CLOs are included in the index has been updated (see first bullet above), resulting in modest changes to some previously published metrics.

As of date	'B-' (%)	'CCC' category (%)	Nonperforming assets (%)	SPWARF	WARR (%)	Watch Neg (%)	Negative outlook (%)	Weighted avg. price of portfolio ($)	Jr. O/C cushion (%)	% of target par
Apr 1, 2022	27.66	3.87	0.11	2692	60.17	0.92	10.04	97.77	4.67	99.77
May 1, 2022	28.18	3.74	0.12	2696	60.20	1.06	9.40	97.59	4.78	99.79
Jun 1, 2022	28.06	3.72	0.17	2702	60.06	1.18	9.81	94.72	4.62	99.82
Jul 1, 2022	28.88	3.69	0.30	2718	59.88	1.26	10.41	92.21	4.68	99.84
Aug 1, 2022	29.09	3.68	0.28	2724	59.88	1.37	11.07	93.75	4.72	99.89
Sep 1, 2022	29.49	3.74	0.53	2746	59.83	0.96	11.65	94.72	4.66	99.91
Oct 1, 2022	29.29	3.90	0.48	2743	59.93	1.04	12.82	92.00	4.62	99.90
Nov 1, 2022	29.29	4.58	0.35	2746	59.89	0.52	13.88	92.37	4.63	99.93
Dec 1, 2022	30.22	4.61	0.29	2744	59.96	0.32	14.06	93.03	4.60	99.93
Jan 1, 2023	30.23	5.05	0.45	2758	59.97	0.12	14.81	92.77	4.60	99.94
Feb 1, 2023	30.30	5.24	0.42	2760	60.09	0.15	15.26	94.66	4.49	99.94
Mar 1, 2023	30.69	4.86	0.66	2766	59.93	0.22	16.05	94.56	4.41	99.91
Apr 1, 2023	30.79	5.06	0.64	2764	59.63	0.31	16.50	93.86	4.32	99.90
May 1, 2023*	30.86	5.76	0.70	2780	60.20	0.46	17.14	94.19	4.28	99.91

*Index metrics based on ratings and pricing data and latest portfolio data available to us as of May 1, 2023. SPWARF—S&P Global Ratings’ Weighted Average Rating Factor. WARR—Weighted average recovery rate. WAPP—Weighted average price of portfolio. O/C—Overcollateralization. Source: S&P Global Ratings.

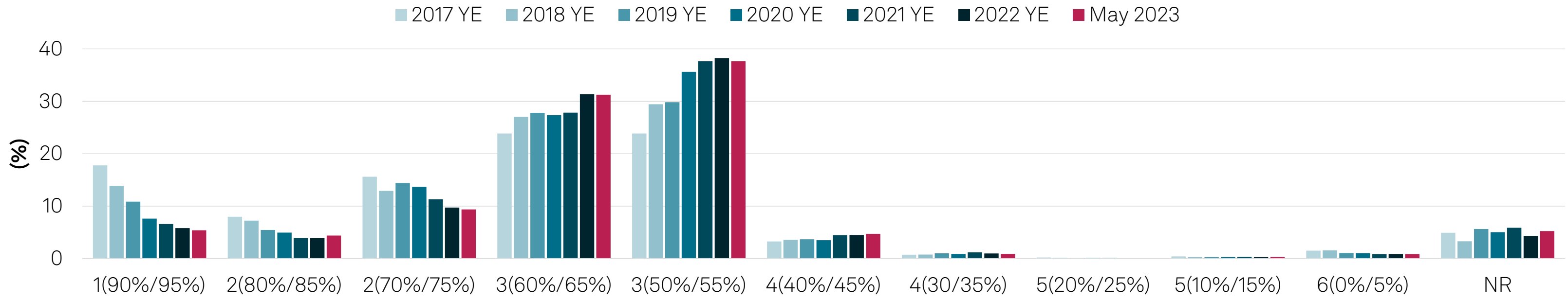
U.S. BSL CLOs | Assets From ‘B-’ Obligors Continue To Increase

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



YE—Year end. Source: S&P Global Ratings.

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

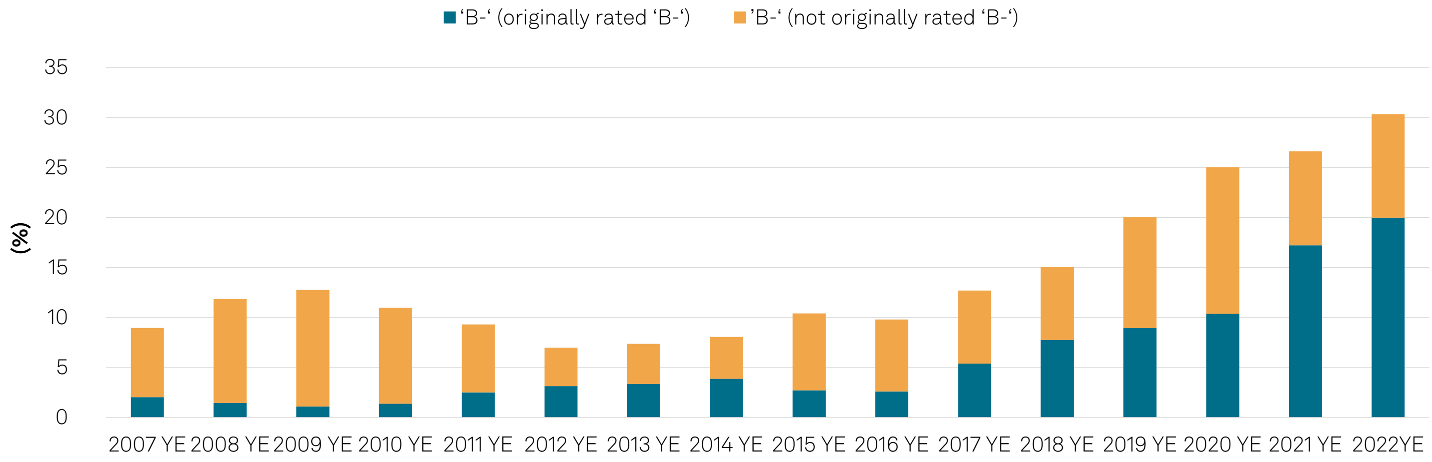


*As of May 1, 2023. NR--Not rated. YE—Year end. Source: S&P Global Ratings.

- Loans from issuers rated ‘B-’ now comprise about 31% of CLO portfolios, more than double the proportion they were four years ago.
- 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% make up over 37% of total CLO asset par, compared with less than 30% prior to the COVID-19 pandemic.

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

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



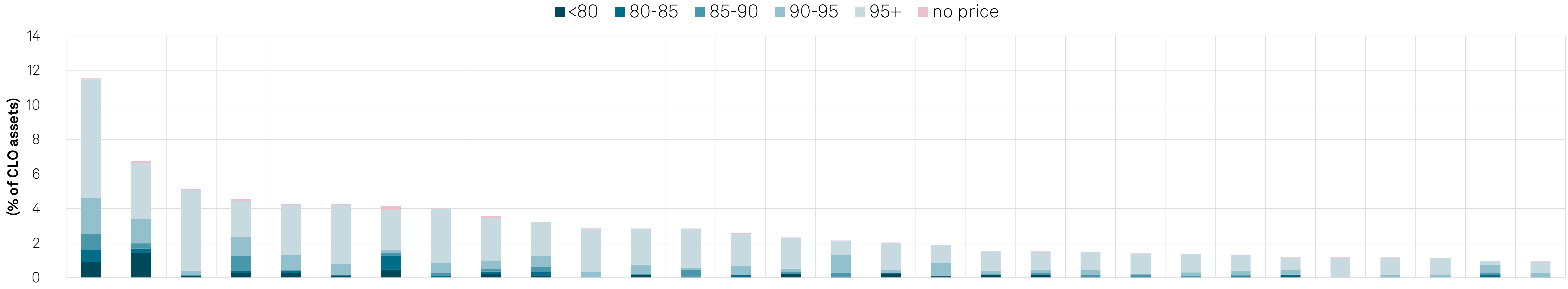
Proportion of 'B-’ exposures across CLO index at start of 2022

(% 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

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, ending the year at just over 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).
- Since 2017, there has been significant growth in issuers originally rated ‘B-’ (blue bar).
- Of the ‘B-’ exposures across US BSL CLO portfolios at the start of 2022, 8.9% saw downgrades (into the ‘CCC' category) during the year; however, only 4.9% of the original ‘B-’ exposures experienced downgrades while 16.7% of the not original ‘B-’ exposures experienced downgrades during the same time period.
- As of year-end 2022, a majority (two thirds) of the current ‘B-’ exposures are from issuers that were originally and recently rated ‘B-’ and have not experience rating actions yet.

U.S. BSL CLOs | Healthcare Providers And Services, Software Sectors Have The Highest Proportion Of CLO Assets Trading Below 80%



Loan price	Software	Healthcare providers and services	Hotels, restaurants and leisure	Media	IT services	Capital markets	Diversified telecommunication services	Machinery	Commercial services and supplies	Chemicals	Insurance	Specialty retail	Professional services	Trading companies and distributors	Containers and packaging
95+	59.8	48.0	90.4	45.7	68.0	80.2	55.0	77.2	69.8	60.8	87.3	73.0	78.6	72.7	75.3
90-95	17.8	20.9	4.8	24.3	20.5	15.1	4.7	15.2	13.3	19.3	11.8	18.3	5.0	19.8	8.6
85-90	8.0	4.5	1.4	19.2	0.7	0.8	4.2	4.3	4.6	8.8	0.0	2.3	13.4	0.8	4.1
80-85	6.2	3.8	0.0	2.8	3.0	0.4	18.9	2.0	3.8	6.1	0.0	0.1	1.7	4.8	1.4
<80	7.7	21.2	1.8	5.7	6.6	2.8	11.4	0.3	6.2	4.1	0.0	5.6	0.7	0.8	8.7
No price	0.5	1.6	1.6	2.3	1.1	0.8	5.7	1.0	2.3	0.8	0.9	0.8	0.6	1.1	1.9

Loan price	Health care technology	Entertainment	Building products	Food Products	Diversified consumer services	Construction and engineering	Aerospace and defense	Life Sciences tools and services	Auto components	Pharmaceuticals	Oil, gas and consumable fuels	Road and rail	Airlines	Household durables	Interactive media and services
95+	39.3	75.6	55.4	72.9	67.8	69.6	83.0	77.2	68.7	62.0	98.3	84.8	81.4	21.3	67.4
90-95	47.1	8.9	37.3	11.7	12.9	19.8	3.4	14.6	20.6	21.1	0.6	14.8	16.0	49.8	27.6
85-90	10.7	0.9	1.4	3.1	7.2	7.0	11.4	7.3	1.3	3.9	0.0	0.1	0.0	11.2	1.9
80-85	0.1	0.0	1.3	1.0	1.3	2.1	0.6	0.0	4.4	5.1	0.0	0.0	0.0	12.9	0.0
<80	2.9	12.1	4.0	11.0	10.0	1.3	1.1	0.0	4.5	6.3	0.0	0.0	0.0	3.7	0.6
No price	0.0	2.5	0.6	0.4	0.9	0.3	0.6	0.9	0.5	1.6	1.1	0.4	2.6	1.1	2.5

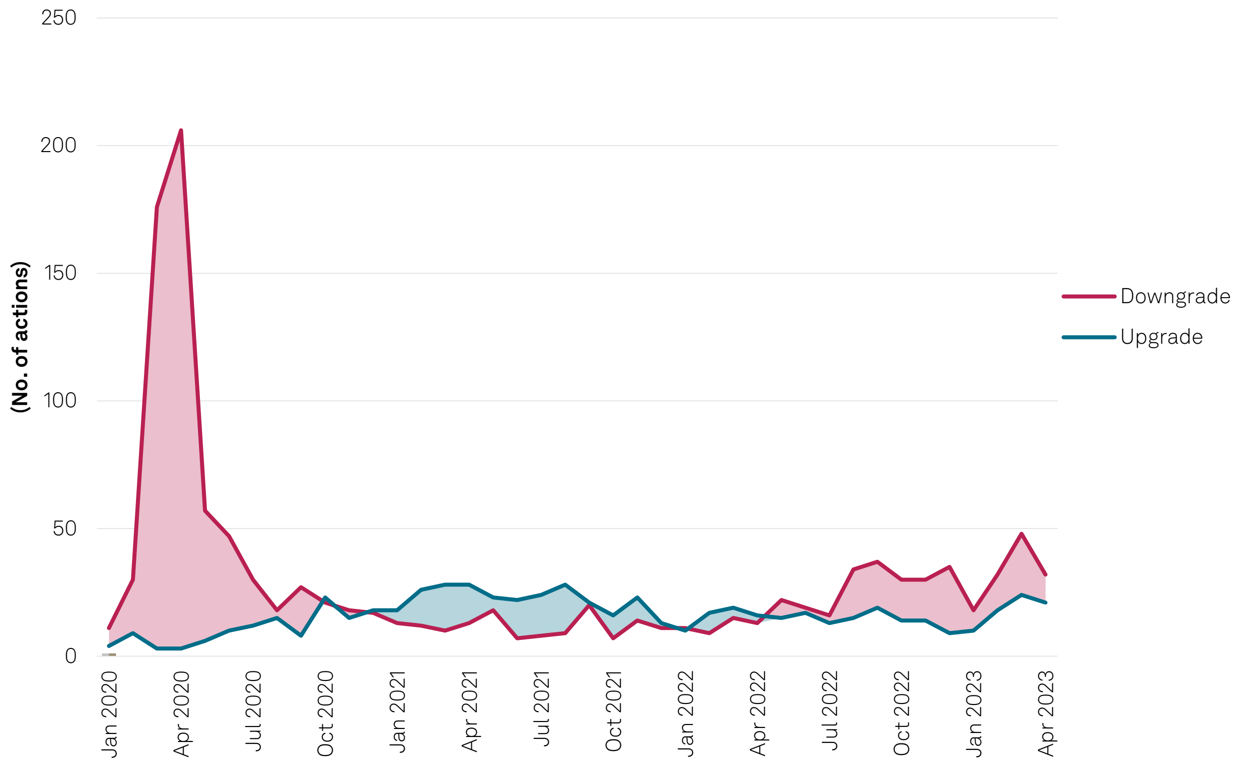
*Data as of May 1, 2023.

Source: S&P Global Ratings.

U.S. BSL CLOs | U.S. CLO Obligor Downgrades Elevated Since Mid-2022

Since May 2022, monthly corporate rating downgrades have outpaced upgrades as post-pandemic tailwinds fade.

Spec-grade corporate rating actions in BSL CLO collateral pools
(Jan 2020- Apr 2023)



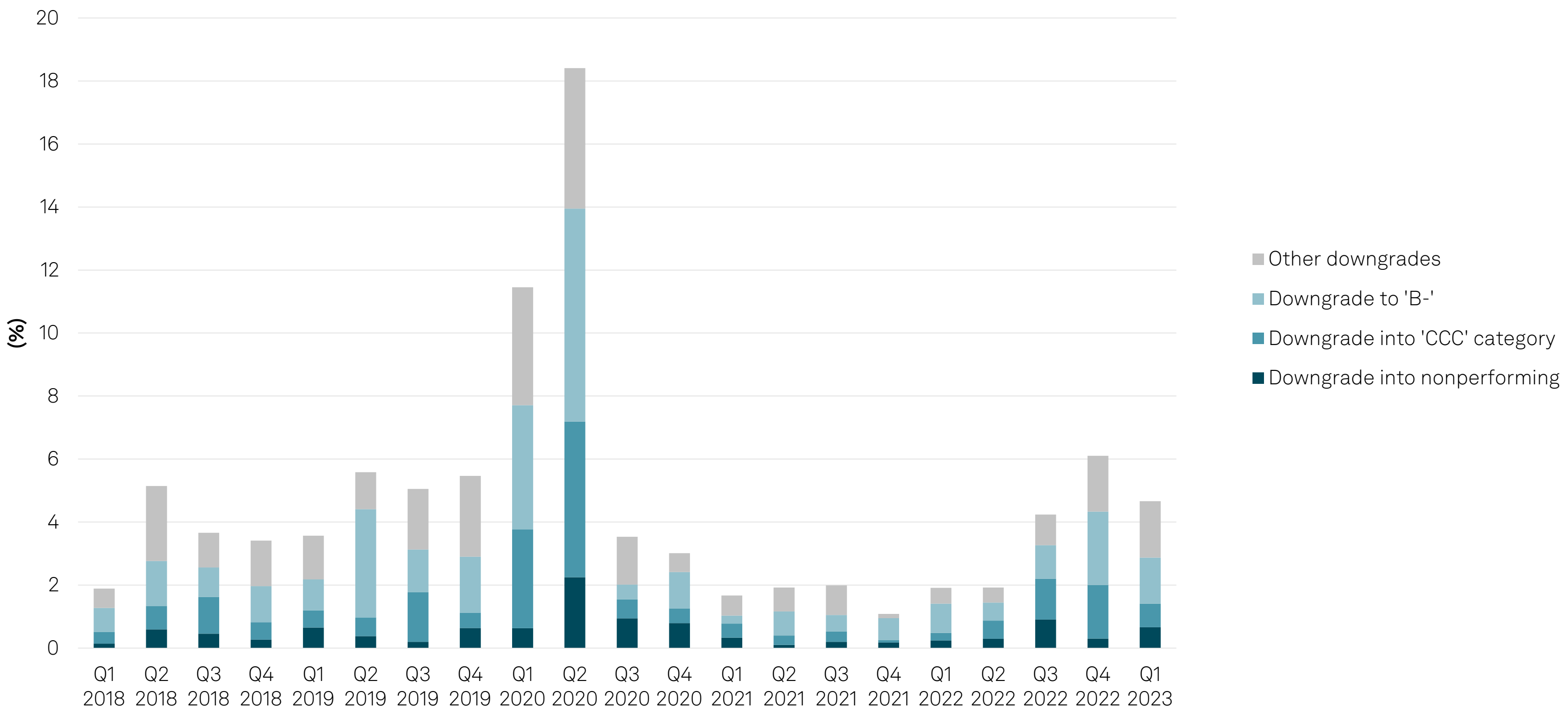
DG—Downgrade. Source: S&P Global Ratings.

Downgrades on U.S. BSL CLO obligor ratings in 2022 - 2023

(No. of actions)	Total DG	DG to 'B-'	DG into 'CCC' category	DG to below 'CCC-'
Jan 2022	11	4	1	1
Feb 2022	9	2	4	1
Mar 2022	15	3	3	0
Apr 2022	13	3	4	3
May 2022	22	6	5	3
Jun 2022	19	7	3	4
Jul 2022	16	7	4	1
Aug 2022	34	10	9	3
Sep 2022	37	14	9	3
Oct 2022	30	7	9	5
Nov 2022	30	7	6	2
Dec 2022	35	8	15	3
Jan 2023	18	3	4	1
Feb 2023	32	5	5	8
Mar 2023	48	13	7	13
Apr 2023	32	6	9	5
Total	**401**	**105**	**97**	**56**

U.S. BSL CLOs | Corporate Downgrades Weigh On CLO Portfolios, Again

Average CLO assets downgraded (% total par, by quarter)



Source: S&P Global Ratings.

- After peaking in Q2 2020, BSL CLO exposure to downgrades remained muted for several quarters until Q3 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, then tracked which of those obligors saw ratings lowered during the quarter.
- Downgrades of corporate ratings into the 'CCC' range increased during the second half of 2022, but then moderated in Q1 2023.

U.S. BSL CLOs | Exposure To Q1 Rating Actions By Top 30 CLO Managers (By S&P Rated CLO Count)

Manager at close of deal	No. of S&P-rated deals in sample	Upgrades (%)	Downgrades (%)	Downgrade to 'B-' (%)	Downgrade into 'CCC' category (%)	Downgrade into nonperforming (%)	Other downgrades (%)	Top 250 (%)
Ares CLO Management LLC	29	3.03	6.02	1.43	1.10	1.25	2.24	55.91
Octagon Credit Investors, LLC	25	3.32	7.23	1.95	0.77	1.34	3.17	59.99
Carlyle Investment Management LLC	23	2.81	4.76	1.92	0.33	0.65	1.85	59.49
Credit Suisse Alternative Capital LLC	23	2.94	2.83	0.55	0.28	0.94	1.05	48.86
Neuberger Berman Inc.	22	3.89	3.43	2.15	0.16	0.18	0.93	56.31
Oak Hill Advisors L.P.	21	4.12	3.61	0.79	0.20	0.34	2.27	53.53
Commercial Industrial Finance Corp.	20	3.48	5.42	1.90	1.05	0.60	1.87	57.97
PGIM Inc.	20	4.85	5.72	1.36	0.97	1.15	2.24	52.15
Voya Alternative Asset Management LLC	19	3.22	5.34	1.47	0.65	1.49	1.74	57.37
BlueMountain Capital Management L.P.	18	2.97	3.17	0.82	0.06	0.41	1.88	49.27
GSO Capital Partners, L.P.	17	4.18	3.96	0.99	0.69	0.51	1.78	67.26
CVC Credit Partners, LLC	15	2.33	3.80	1.82	0.00	0.09	1.89	53.53
Bain Capital Credit L.P.	14	2.52	4.86	1.68	0.36	0.66	2.17	41.87
Benefit Street Partners LLC	14	3.18	4.04	1.37	0.56	0.54	1.57	55.71
Elmwood Asset Management LLC	13	2.77	3.08	1.20	0.25	0.14	1.49	48.55
Blackstone/GSO Debt Funds Europe Ltd.	12	3.04	4.27	1.52	0.91	0.40	1.44	64.92
GoldenTree Asset Management L.P.	12	3.24	4.46	1.94	0.61	0.83	1.09	51.10
Onex Credit Partners LLC	12	2.96	3.80	1.24	1.09	0.48	0.99	52.23
AEGON USA Investment Management LLC	11	3.91	5.17	1.58	0.20	1.33	2.06	47.91
Barings LLC	10	2.73	4.45	1.15	0.83	0.88	1.58	47.87
BlackRock Financial Management Inc.	10	4.17	5.75	2.05	1.16	0.37	2.18	63.08
HPS Investment Partners LLC	10	4.93	4.32	1.43	0.90	0.58	1.41	50.72
KKR Financial Advisors	10	1.78	5.00	1.34	1.51	0.43	1.72	43.89
LCM Asset Management LLC	10	2.37	5.12	2.12	0.98	0.63	1.39	45.87
Oaktree Capital Management L.P.	10	3.68	3.93	0.80	0.66	0.18	2.29	51.08
Crescent Capital Group LP	9	3.12	6.11	1.57	0.47	1.08	3.00	55.72
Redding Ridge Asset Management (UK) LLP	9	2.89	4.53	1.43	0.26	0.17	2.67	64.41
TCW Asset Management Co. LLC	8	0.98	6.83	1.92	2.72	0.56	1.62	45.31
Allstate Investment Management Co.	7	2.26	3.06	0.73	0.31	0.25	1.78	61.87
Anchorage Capital Group LLC	7	3.63	3.51	0.76	1.77	0.67	0.30	36.84
Average total		**3.21**	**4.67**	**1.46**	**0.75**	**0.66**	**1.79**	**52.38**

Source: S&P Global Ratings.

U.S. BSL CLOs | CLO Managers De-Risk Portfolios In Q1 2023

	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

S&P BSL CLO asset trades by company rating in first-quarter 2023

Rating category	Purchase (% of trades)	Avg. purchase price	Sales (% of trades)	Avg. sale price
Investment grade	0.8%	97.53	0.64	98.50
'BB' category	21.17	98.42	16.93	98.86
'B+'	24.28	98.28	14.90	98.29
'B'	25.98	96.93	23.25	97.11
'B-'	23.71	95.20	28.76	93.74
'CCC' category	4.01	94.78	13.32	80.85
Nonperforming	0.04	93.41	2.19	34.14

Source: S&P Global Ratings.

- Since 2022, ratings of assets purchased has tended to be higher than ratings of the assets sold, which is evidence of CLO manager efforts at de-risking. This can be seen in the shifting SPWARF, which measures the ratings mix of CLO collateral pools.
- Since Q3 2022, prices of loans purchased have been significantly higher than the prices of loans sold, indicating that managers have been willing to trade par for credit.
- The proportion of sales of 'CCC' category and nonperforming assets are greater than the proportion of purchases from these rating categories, further evidencing managers' attempts at de-risking.
- Managers purchased a small amount of debtor-in-possession (DIP) loans from defaulted obligors during Q1 2023. Historically, DIP loans have performed better than like-rated nonDIP loan corporate debt.

U.S. BSL CLOs | Value Of Active Management During A Turbulent 2022

- Turnover of assets in BSL CLO collateral pools in 2022 was just over 30.5%, meaning that just over 30% of the loans that had been in CLO collateral pools at the start of the year were no longer in the collateral pools at the end of the year.
- To examine the impact that portfolio turnover had on CLO credit metrics, we looked at:
  - The actual change in BSL CLO credit metrics during 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 during 2022 (Table 2).
- For the hypothetical static pool CLO scenario, the same assets were in the collateral pools at the start of the year and end of the year.
- The difference between the actual CLO portfolios and hypothetical static CLO portfolios is shown in 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), the par value of the assets was greater, and the junior O/C test cushion was greater.

Table 1 - Actual BSL CLO Performance in 2022

Metric	01-Jan-22	31-Dec-22	Change
Portfolio turnover	n/a	30.55%	30.55%
Exposure to 'B-' assets	26.36%	30.03%	3.67%
Exposure to 'CCC' assets	4.93%	5.23%	0.30%
Exposure to defaulted assets	0.17%	0.50%	0.33%
SPWARF	2699	2764	65
Portfolio % of target par	99.66%	99.85%	0.19%
Junior O/C test cushion	4.35%	4.45%	0.09%

Table 2 - Hypothetical Static Pool BSL CLO Performance in 2022

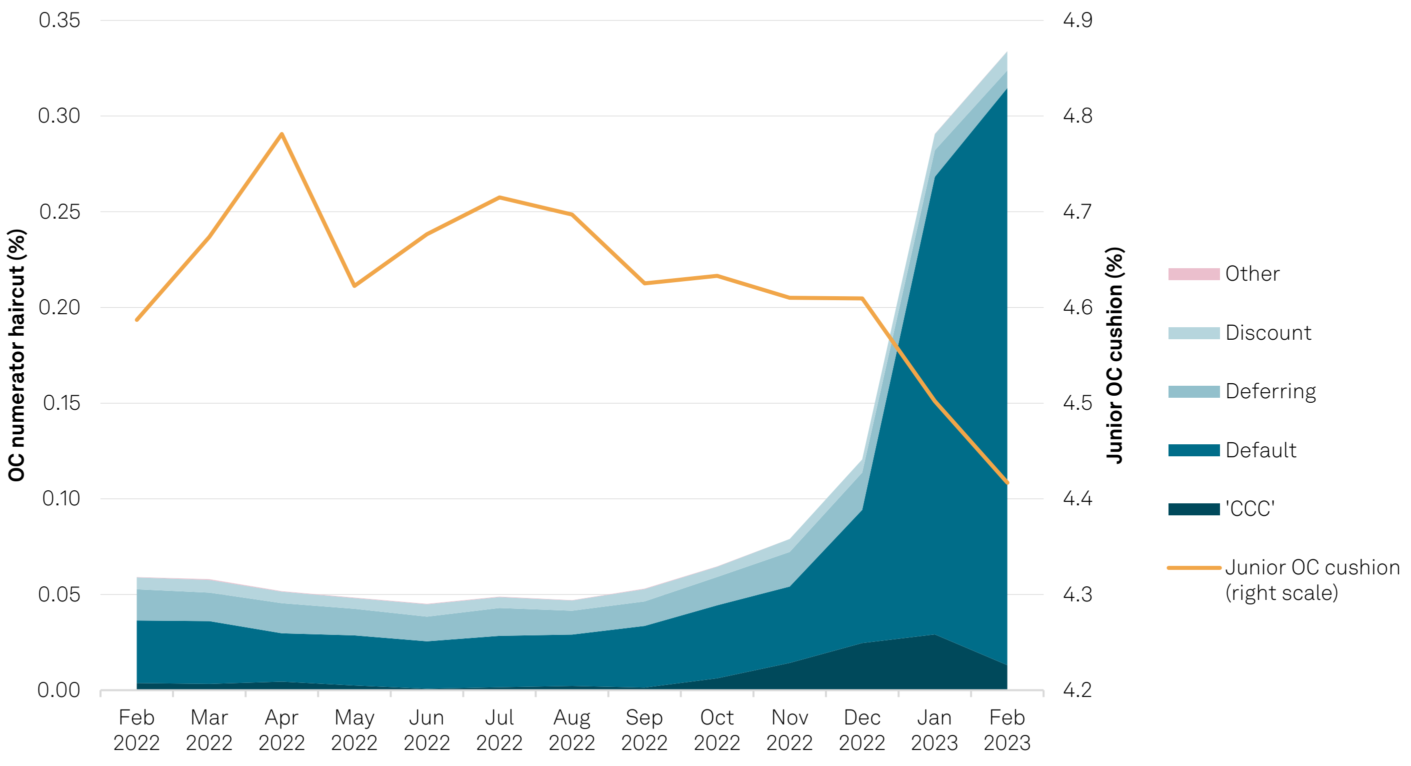
Metric	01-Jan-22	31-Dec-22	Change
Portfolio turnover	n/a	0.00%	0.00%
Exposure to 'B-' assets	26.36%	28.14%	1.78%
Exposure to 'CCC' assets	4.93%	7.33%	2.40%
Exposure to defaulted assets	0.17%	0.81%	0.65%
SPWARF	2699	2804	105
Portfolio % of target par	99.66%	99.66%	0.00%
Junior O/C test cushion	4.35%	4.15%	-0.20%

Table 3 - Manager Impact On CLO Metrics

Metric	Year-end results: Managed vs. hypothetical
Portfolio turnover	30.55% higher
Exposure to 'B-' assets	1.89% higher
Exposure to 'CCC' assets	2.10% lower
Exposure to defaulted assets	0.31% lower
SPWARF	40 lower
Portfolio % of target par	0.19% higher
Junior O/C test cushion	0.30% higher

U.S. BSL CLOs | Defaults Of Some Widely Asset Modestly Erode CLO Junior O/C Ratios

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



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

- Several widely held CLO obligors defaulted in Q1 2023, impacting CLO O/C ratios. These included Avaya, Diamond Sports, and Bosch Health among others.
- O/C cushions have declined slightly since the start of the year, though on average, they remain positive at over 4% as of Q1 2023.
- O/C ratio haircuts from excess 'CCC' assets were minimal in early 2022 but increased slightly toward the end of the year.
- The O/C haircuts for the reinvesting U.S. BSL CLOs mostly come from exposure to defaulted assets followed by haircuts from excess 'CCC' assets then deferring assets. Most CLOs are not close to breaching their 7.5% threshold, though a few pre-pandemic transactions have already exceeded it.
- Some amortizing transactions are currently failing their junior O/C cushions.

U.S. BSL CLOs | Rising ‘CCC’ Baskets Could Start To Affect Junior O/C Ratios, Especially For Pre-Pandemic CLOs

- We published a study on the potential impact of ‘B-’ downgrades to O/C test cushions across US BSL CLOs under four scenarios: ‘CCC+’ and below exposures increase to 10%, 15%, 20% and 25%.
- Under each of the four scenarios, we modeled the O/C test cushion impact under various price declines of the assumed downgraded collateral, ranging from no change in price to a 50% decline, in increments of 10%.
- We find that most 'BB' tranche O/C test cushions can withstand 'CCC' baskets increasing into the mid-teens or more before failing.
- Amortizing CLOs have less junior O/C cushion and are more likely to experience failures in each of the scenarios; reinvesting post-pandemic transactions have less ‘CCC’ exposures and more junior O/C cushion and thus can absorb more deterioration before failure.

Average portfolio metrics for different cohorts of BSL CLOs (%, as of March 2023)

CLO cohort	Avg. junior O/C test cushion	Avg. ‘CCC’ asset exposure	Avg. ‘B-‘ asset exposure	Avg. ‘B-‘ on outlook negative
Pre-pandemic – amortizing	2.53	6.33	27.18	4.28
Pre-pandemic – reinvesting	3.69	5.44	29.87	4.10
Post-pandemic – reinvesting	5.25	4.06	31.43	3.98
Overall	4.35	5.14	30.52	4.14

Average price of loans in BSL CLOs (U.S. $)

	Loans from all obligors			Loans from obligors with ratings lowered into the ‘CCC’ range during quarter		
Quarter	Price at start of prior quarter	Price at start of quarter	Price at end of quarter	Price at start of quarter prior to DG	Price at start of DG quarter	Price at end of DG quarter
Q1 2022	98.82	98.79	97.88	96.98	95.92	92.51
Q2 2022	98.79	97.88	92.19	93.68	91.73	84.83
Q3 2022	97.88	92.19	92.12	93.99	83.46	75.36
Q4 2022	92.19	92.12	92.88	86.91	80.66	71.72
Q1 2023	92.12	92.88	93.81	84.02	77.58	72.86

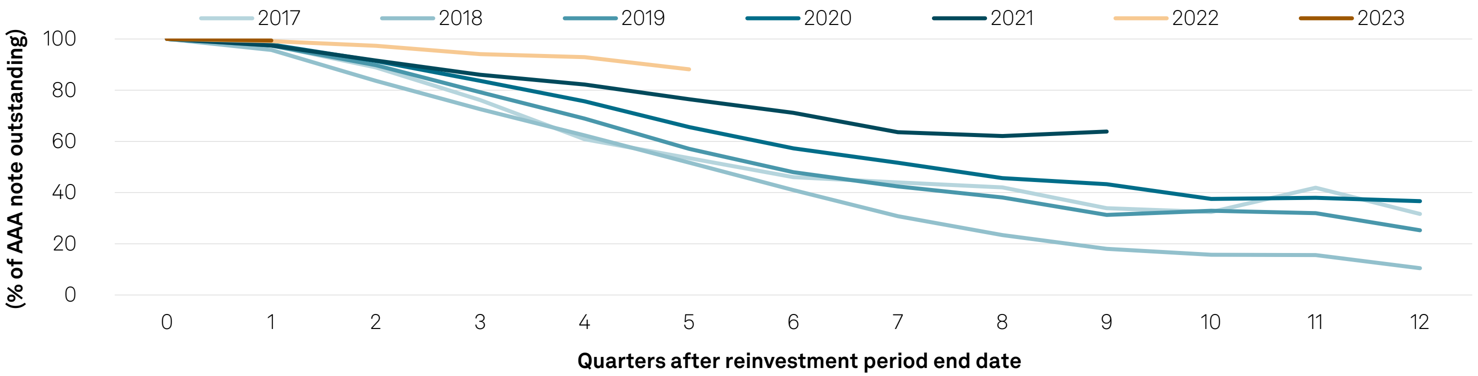
O/C—Overcollateralization.

Source: S&P Global Ratings, How Rising U.S. BSL CLO 'CCC' Baskets Could Affect Junior Overcollateralization Test Cushions, published April 28th, 2023.

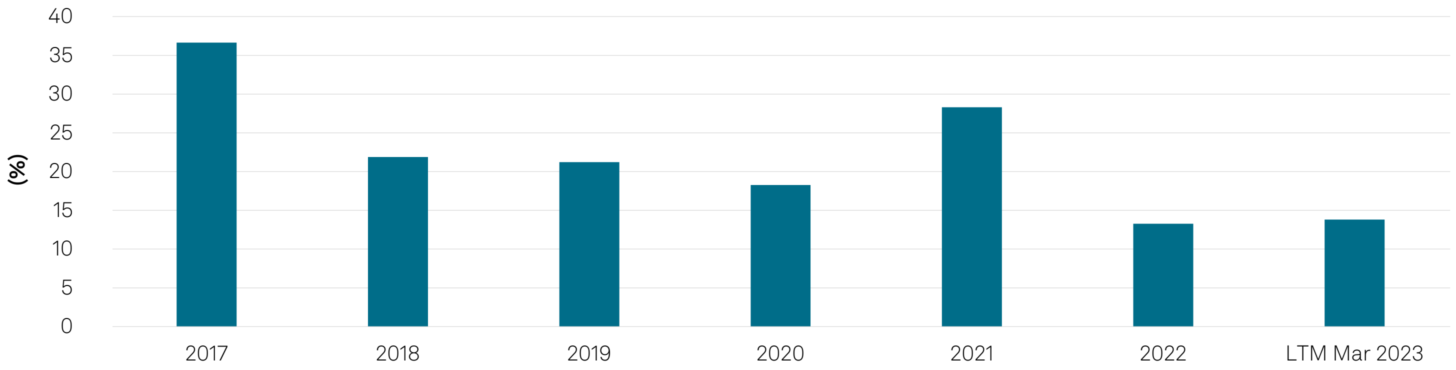
U.S. BSL CLOs | Senior Tranche Amortization Stalls

- About 37% of U.S. BSL CLOs will be outside of their reinvestment period by the end of 2023.
- The level of loan prepayments last year and so far this year have hit recent lows.
- Transactions that have recently exited their reinvestment period have experience less senior note paydowns relative to older transactions.
- Within recent quarters, transactions that have already exited their reinvestment period have experienced a flattening in their senior note paydown rate (i.e., transactions that exited their reinvestment period in 2020 and 2021).
- Excluding transactions that have optionally redeemed, amortizing transactions, on average, would take less than two years to pay down the notional of the senior notes by 50%.
- Transactions that have exited their reinvestment period within the past three years may take significantly longer.

Avg. balance of outstanding BSL CLO AAA tranches per period after Reinvestment Period



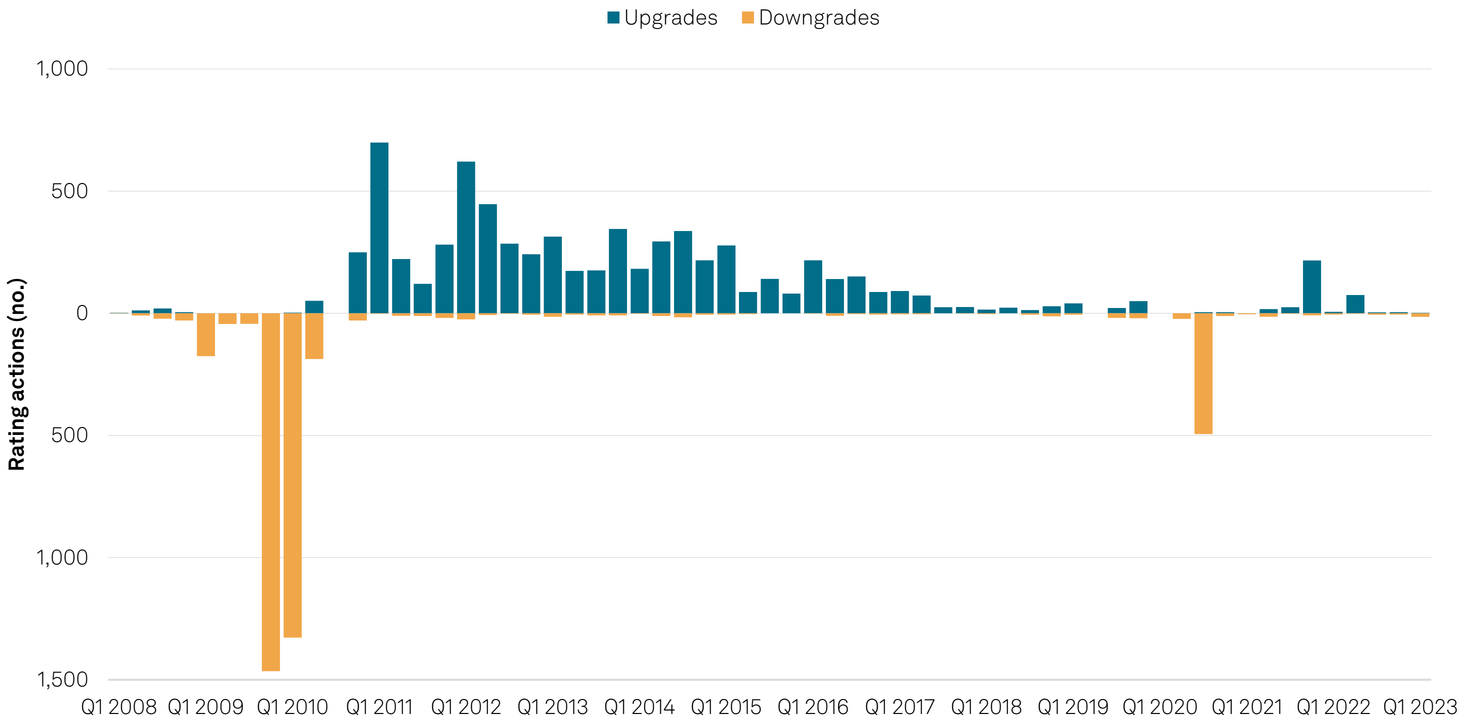
Annual Morningstar LSTA US LL Index repayment rates



Data includes outstanding transactions only. Source: S&P Global Ratings.

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

U.S. CLO rating upgrades and downgrades (2008-Q1 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 U.S. CLO 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.
- Downgrades taken in 2022 were on junior tranches from pre-pandemic CLOs that had already been downgraded previously (all 2022 downgrades were lowered into the 'CCC' category or lower).

U.S. CLO Tranche Defaults | As Of April 1, 2023

U.S. 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	**Defaults**	**Currently rated**	**Original rating**	**Defaults**	**Currently rated**
AAA (sf)	1,540	0	0	3,545	0	1,568
AA (sf)	616	1	0	2,864	0	1,307
A (sf)	790	5	0	2,372	0	1,135
BBB (sf)	783	9	0	2,156	0	1,120
BB (sf)	565	22	0	1,758	7	923
B (sf)	28	3	0	384	9	184
Total	4,322	40	0	13,079	16	6,237

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

Transaction	Tranche	Year originated	Original rating	Current rating
Mountain View CLO 2014-1 Ltd.	F	2014	B- (sf)	CCC- (sf)
Halcyon Loan Advisors Funding 2012-1 Ltd.	C	2012	BBB (sf)	CCC- (sf)
Catamaran CLO 2014-2 Ltd.	E	2014	B (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)

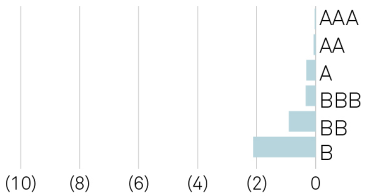
Source: S&P Global Ratings.

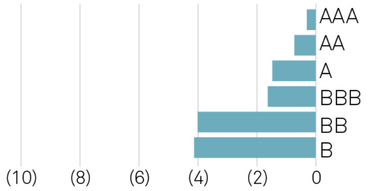
- S&P Global Ratings has rated **more than** 17,000 U.S. CLO tranches since our first CLOs in the mid-1990s. Our CLO ratings history **spans three recessionary periods**: the dot.com bust of 2000-2001, the GFC in 2008-2009, and the recent COVID-19-driven downturn in 2020.
- Over that period, a total of 56 U.S. CLO tranches **defaulted:** 40 U.S. CLO tranches from CLO 1.0 transactions originated in 2009 or before, and another 16 U.S. CLO 2.0 tranches.
- On the date these 16 U.S. CLO 2.0 tranches were lowered to 'D (sf)', the reported outstanding tranche balance ranged from 2.5% to just over 100% (due to payment-in-kind of their original issuance amount); tranches originally rated within the 'BB (sf)' category averaged 34%, while tranches originally rated within the 'B (sf)' category averaged 59%.
- Across five other CLO 2.0s, there are two tranches rated 'CC (sf)' that are **likely to default** in the future for similar reasons and another three tranches rated 'CCC- (sf)' that may default.

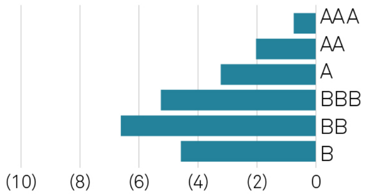
U.S. BSL CLO Rating Stresses | Scenarios 1-4 (Default And ‘CCC’ Stresses)

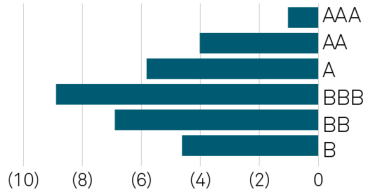
Scenario		Impact across CLO sample
5/10 scenario	526 issuers see ratings lowered, including 267 issuers that default	15% of CLO assets experience downgrades; average 'CCC' bucket increases to 10.2%; average nonperforming exposure increases to 4.6%; average par loss of 2.5%
10/20 scenario	747 issuers see ratings lowered, including 342 issuers that default	30% of CLO assets experience downgrades; average 'CCC' bucket increases to 20.1%; average nonperforming exposure increases to 9.9%; average par loss of 5.4%
15/30 scenario	1,029 issuers see ratings lowered, including 526 issuers that default	45% of CLO assets experience downgrades; average 'CCC' bucket increases to 30.4%; average nonperforming exposure increases to 14.8%; average par loss of 8.1%
20/40 scenario	1,222 issuers see ratings lowered, including 589 issuers that default	60% of CLO assets experience downgrades; average 'CCC' bucket increases to 40.6%; average nonperforming exposure increases to 19.7%; average par loss of 10.8%

Model-determined impact: average notches off current rating









- These four rating stress scenarios are identical to ones we applied for our scenario analyses published in April 2020 and June 2021.
- 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.

Source: “Scenario Analysis: How The Next Downturn Could Affect U.S. BSL CLO Ratings (2022 Update),” published Aug. 4, 2022

U.S. BSL CLO Rating Stresses | Scenarios 1-4 (Default And ‘CCC’ Stresses)

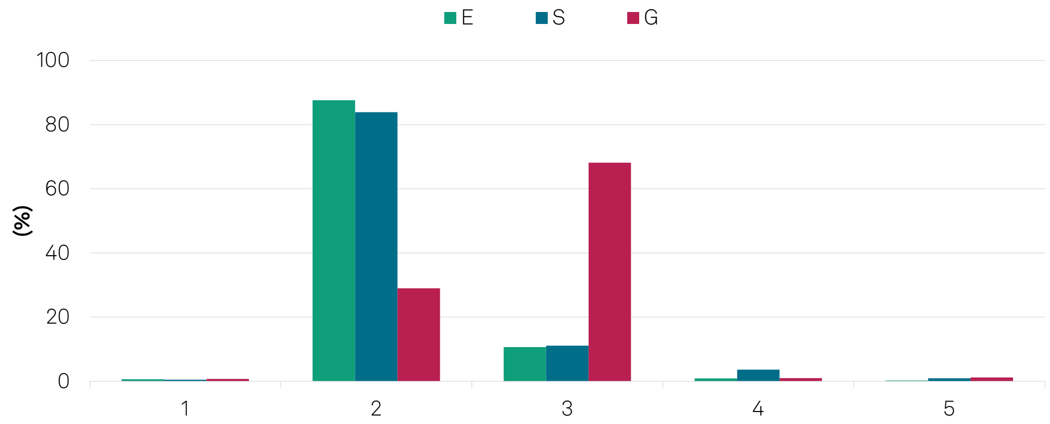
Current rating category	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	≥ -7 (%)	Avg notches	Investment grade (%)	Speculative grade (%)	‘CCC’ (%)	Non-performing (%)
5/10 scenario — Cash Flow Results Under “5-10” Scenario (2022)													
‘AAA’	97.37	2.63							-0.03	100.00			
‘AA’	93.02	6.44	0.54						-0.08	100.00			
‘A’	74.74	18.20	7.07						-0.32	100.00			
‘BBB’	68.07	30.43	0.75	0.75					-0.34	71.21	28.79		
‘BB’	40.61	41.95	8.43	5.56	1.92	0.96	0.19	0.38	-0.92		100.00	2.87	0.38
‘B’	28.96	11.48	14.75	8.74	31.69	3.28	1.09		-2.17		100.00	31.15	30.05
10/20 scenario — Cash Flow Results Under “10-20” Scenario (2022)													
‘AAA’	70.59	29.41							-0.29	100.00			
‘AA’	49.80	27.79	22.01	0.13	0.13	0.13			-0.73	100.00			
‘A’	19.25	21.35	53.68	2.56	2.41	0.75			-1.50	99.10	0.90		
‘BBB’	13.64	52.77	11.99	9.45	6.45	2.55	1.50	1.65	-1.66	15.29	84.71	0.90	0.30
‘BB’	3.26	12.26	15.13	12.07	14.56	11.11	7.09	24.52	-4.07		100.00	31.80	24.52
‘B’	2.73	3.28	2.19	6.01	53.55	9.29	22.95		-4.24		100.00	19.13	77.05
15/30 scenario — Cash Flow Results Under “15-30” Scenario (2022)													
‘AAA’	25.91	73.84	0.25						-0.74	100.00			
‘AA’	9.80	10.74	62.95	3.22	7.52	5.50		0.27	-2.06	99.73	0.27		
‘A’	1.50	2.86	39.25	10.23	22.41	20.00	1.80	1.95	-3.28	76.24	23.76	0.15	
‘BBB’	0.45	7.80	8.70	9.00	20.84	11.24	9.90	32.08	-5.35	0.60	99.40	16.49	14.99
‘BB’	0.19	0.38	1.15	0.77	2.49	2.49	3.64	88.89	-6.75		100.00	8.43	88.70
‘B’		1.09			59.02	6.01	33.88		-4.70		100.00	1.09	98.91
20/40 scenario — Cash Flow Results Under “20-40” Scenario (2022)													
‘AAA’	7.01	86.36	3.75	2.00	0.75	0.13			-1.04	100.00			
‘AA’	1.48	2.15	20.67	6.85	13.96	47.79	1.61	5.50	-4.10	97.58	2.42		
‘A’			4.96	2.71	9.32	42.56	9.17	31.28	-5.93	16.99	83.01	3.76	1.35
‘BBB’		0.15	0.45	1.20	2.40	3.45	5.70	86.66	-9.06		100.00	15.29	70.61
‘BB’						0.19		99.81	-7.04		100.00	0.19	99.81
‘B’					60.11	6.01	33.88		-4.74		100.00		100.00

Source: Scenario Analysis: How The Next Downturn Could Affect U.S. BSL CLO Ratings (2022 Update), published Aug. 4, 2022.

U.S. BSL CLOs | Exposure To Companies With Low ESG Credit Indicators

- The influence of environmental, social, and governance (ESG) factors in our credit rating analysis of global CLOs primarily depends on the influence of ESG factors in our analysis of the underlying obligors. This influence is reflected in our ESG credit indicators for the underlying obligors, where available. Our ESG credit indicator for each underlying obligor is not a sustainability rating or an S&P Global Ratings ESG evaluation. Rather, it isolates our opinion of the influence of ESG factors in our credit rating analysis of that obligor.
- To provide additional disclosure and transparency of the influence of ESG factors for the CLO asset pool in aggregate, we've calculated the weighted-average and distributions of our ESG credit indicators for the underlying obligors.
- The environmental and social credit indicators across CLO obligors are concentrated in the E-2 and S-2 categories, respectively. We consider that these credit indicators are, on a net basis, a neutral consideration in our credit rating analysis of the underlying obligor.
- Most of the governance credit indicators for CLO obligors are concentrated in the G-3 category. We consider that this credit indicator is, on a net basis, a moderately negative consideration in our credit rating analysis of the underlying obligor.

U.S. CLO obligor distribution by ESG credit indicator



ESG--Environmental, Social, And Governance.
Source: ESG Credit Indicator Report Card: Global CLOs, published Nov 24, 2022.

Examples of ESG credit factors

Environmental factors	Social factors	Governance factors
Climate transition risk	Health and safety	Governance structure
Physical risk	Social capital	Risk management, culture, and oversight
Natural capital	Human capital	Transparency and reporting
Waste and pollution	Other social factors	Other governance factors
Other environmental factors		

ESG--Environmental, Social, And Governance.
Source: S&P Global Ratings.

U.S. BSL CLOs | Related Research

- Scenario Analysis: How Rising U.S. BSL CLO 'CCC' Baskets Could Affect Junior Overcollateralization Test Cushions, published April 28th, 2023
- SF Credit Brief: CLO Insights 2023 U.S. BSL Index: Obligor Downgrades Hit A Post-Pandemic High; Scenario Analysis Performed On CLO O/C Tests, published April 25th, 2023
- U.S. BSL CLO Obligors: Corporate Rating Actions Tracker 2023 (As Of April 21), published April 25th, 2023
- SLIDES: Middle-Market CLO And Private Credit Quarterly: A Steeper Path Ahead?, published April 24th, 2023
- U.S. BSL CLO Top Obligors And Industries Report: First-Quarter 2023, published April 24th, 2023
- CLO Spotlight: U.S. CLO Tranche Defaults As Of April 1, 2023, published April 7th, 2023
- Credit FAQ: Risks To Leveraged Loans And CLOs Amid An Increasingly Cloudy Macroeconomic Environment, published March 29th, 2023
- SF Credit Brief: CLO Insights 2023 U.S. BSL Index: Credit Metrics Slightly Weaker In February; Another Look At 'B-' Companies In CLOs, published March 20th, 2023
- Credit FAQ: The Potential Impact Of LIBOR Transition On U.S. CLOs, published February 24th, 2023
- SF Credit Brief: CLO Insights 2023 U.S. BSL Index: Assessing The Benefits Of Active Management In 2022, published February 21st, 2023
- SLIDES: U.S. BSL CLO And Leveraged Finance Quarterly: Navigating The Rough 'CCCs', published February 9th, 2023
- Scenario Analysis: How Resilient Are Middle-Market CLO Ratings (2022 Update), published October 19th, 2022
- CLO Spotlight: S&P Global Ratings' Surveillance Process For Monitoring CLO Transactions, published October 14th, 2022
- Par Wars: U.S. CLO Document Provisions Evolve To Provide Managers More Flexibility, published September 23rd, 2022
- Scenario Analysis: How The Next Downturn Could Affect U.S. BSL CLO Ratings (2022 Update), published August 4th, 2022
- Scenario Analysis: LIBOR Transition, Excess Spread, And U.S. CLO Ratings, published June 30th, 2022
- Good Intentions, Limited Impact: ESG-Excluded Sectors Proliferate In U.S. CLO Indentures, published May 16th, 2022

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