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Ratings

U.S. BSL CLO And Leveraged Finance Quarterly: Navigating The Rough 'CCCs'

Q1 2023

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This report does not constitute a rating action.

U.S. Leveraged Finance | Key Takeaways And Risks

Takeaways:

- Risks remain firmly weighted to the downside given our expectations for a modest recession starting in the first-half of 2023.
- Downgrades have outpaced upgrades since May for North American leveraged finance credits, with the pace of downgrades quickening since August. The consumer products sector has been leading the downturn. Resilient operating performance through the third quarter of 2022 has softened the ratings impact thus far.
- Cash flow deficits are our most significant concern for issuers rated 'B' and lower. As of Sept. 30, 2022, the median free operating cash flow (FOCF)-to-debt for ‘B-’ issuers was -1.2%. Earnings shortfalls or downward forecast revisions will ratchet up the proportion of downgrades and negative outlook revisions.
- U.S. corporate debt maturities pose a seemingly little problem in the next 12-18 months. However, ratings pressure for highly leveraged issuers will increase 12 months before a debt maturity date if financing conditions remain challenging.
- We expect trailing-12-month default rates to more than double by Sept. 2023:
  - Speculative-grade default forecast: base case of 3.75% (versus historical average of 4.1%); and
  - Leveraged Loan Index default forecast: base case of 2.5% (at the same level as the historical average of 2.5%).

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.
- 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., Russia-Ukraine conflict, high energy and labor prices, geopolitical tensions, redesigned supply chains, and COVID-19-driven shutdowns).

U.S. CLOs | Key Insights

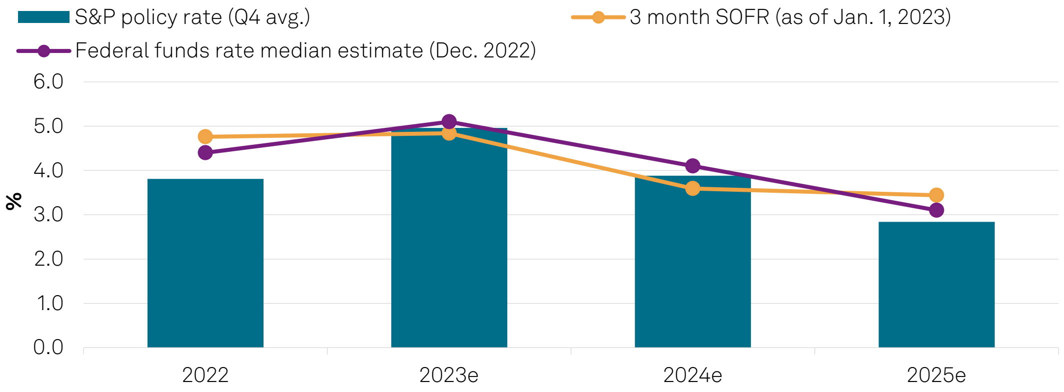
- The positive momentum that had been carrying speculative-grade corporate ratings coming out of the pandemic has been spent, and downgrades accelerated in the final months of 2022 as high interest rates and slowing earnings growth put pressure on corporate ratings. These corporate rating downgrades have started to be felt within U.S. broadly syndicated loan (BSL) collateralized loan obligation (CLO) collateral pools.
- As of Feb. 1, 2023, the average BSL CLO exposure to assets from 'CCC' obligors had increased to 5.5%, up from a low of 4.0% on Aug. 1, 2022. To the extent this exceeds 7.5% of total collateral within a given BSL CLO, the transaction will typically haircut the value of the excess 'CCC' amount for purposes of calculating its overcollateralization (O/C) ratio tests, making it more likely that the junior O/C test could fail, and the CLO divert payments away from the CLO equity and use it to pay down the senior (typically 'AAA') CLO note balance.
- The average BSL CLO junior O/C test cushion still stands at a healthy 4.4%, but the average masks differences between CLOs originated before the arrival of the pandemic and those originated after, with the pre-COVID-19 CLOs having higher average 'CCC' exposure (6.1%) and lower O/C test cushions (3.6%) than the post-COVID-19 CLOs, with an average 4.7% 'CCC' exposure and 5.4% O/C test cushion.
- By the start of 2023, loans from issuers rated 'B-' now comprise just over 30% (a new high) of U.S. BSL CLO portfolios, of which about 4% are 'B-' with a negative rating outlook, up from 26% and 2%, respectively, at the start of 2022.
- Obligors in BSL CLO collateral pools with a negative rating bias (corporate ratings on outlook negative or CreditWatch negative) continue to creep upward, and have increased to 16.0% from a recent low of 11.03% back in May 2022. 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.
- 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 tranche CLO ratings.

U.S. CLOs | Key Insights (continued)

- U.S. CLO new issuance volume for 2022, at $129.3 billion, was robust by historical standards and (just barely) stands as the second-highest issuance year on the books, but it was down 30.8% from the record volume seen in 2021 ($187.1 billion).
- For 2023, we forecast CLO new issuance in a range of $100 billion to $120 billion, based on:
  - U.S. bank treasury departments: In 2021, these investors bought tens of billions of CLO 'AAA' notes because they were flush with deposits from quantitative easing and COVID-19 stimulus checks, and CLOs offered a compelling relative value. In 2022, this slowed considerably. Currently, bank deposits are modestly declining and treasury bills are yielding north of 4% (and have a lighter capital charge than CLO 'AAA's), and a few of the big banks increased their capital ratios thru the fourth quarter, leaving less money for CLO purchases.
  - Japanese banks: We think purchases of CLO 'AAA' notes by Japanese banks could increase depending upon the dollar-to-yen exchange rate and other factors, but it is unlikely in 2023 to get back to the levels seen in the years prior to the pandemic.
  - U.S. insurance companies: These have historically purchased a significant proportion of CLO new issue mezzanine notes. This year, however, some insurers may be keeping an eye on potential changes to National Association of Insurance Commissioners (NAIC) CLO capital charges as soon as the start of 2024.
- January 2023 has seen a spark of energy in the CLO market as new issue BSL CLO 'AAA' tranche spreads came in materially at an average of 208 over the secured overnight financing rate (SOFR) in January 2023 versus 238 in December 2022, and some CLOs priced with 'AAA' spreads as tight as 175 over SOFR. Issuance in January 2023 jumped to $6.87 billion versus $4.91 billion in January 2022.
- In 2022, turnover across US BSL CLO portfolios averaged about 30% for the full year, down from about 49% in 2021 (a year of high refinance activity). As corporate downgrades began to outnumber upgrades across US BSL CLO obligors by mid 2022, we find the trades made across CLO portfolios in 2022 have helped to reduce the 'CCC' category and default exposure, while increasing 'B-' exposure. Additionally, we find US BSL CLOs, on average, saw an increase in the par balance of their portfolios in 2022, helping to improve cushion within OC tests.

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

1. The Level And Persistence Of High Interest Rates



e—estimate. Source: S&P Global Ratings.

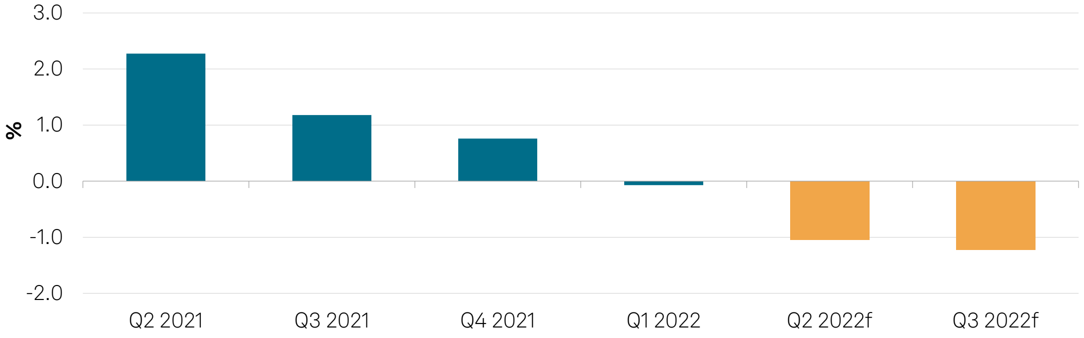
2. Consumer Spending And Earnings Growth

Issuer credit rating	Entity count (No.)	Median EBITDA growth Q/Q (%), reported last 12 months						
		Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022
BB+	105	5.1	11.1	4.8	5.0	4.4	2.6	1.6
BB	113	5.2	10.6	5.9	2.4	2.3	2.9	0.3
BB-	102	5.9	16.6	4.6	4.3	3.1	0.0	1.3
B+	148	6.4	16.0	8.3	7.9	4.4	1.8	1.8
B	191	6.4	11.3	6.4	4.1	3.7	5.6	2.6
B-	238	4.9	7.4	3.3	2.4	1.7	0.6	1.5
CCC+	88	0.5	5.9	0.8	0.1	-0.3	4.0	1.1
CCC	23	-0.5	14.8	1.6	12.4	0.3	7.0	10.5
CCC-	10	2.3	5.5	-14.1	-3.1	-2.3	-6.6	-10.6
CC	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Total	**1,020**	**5.1**	**11.0**	**4.7**	**4.1**	**3.0**	**2.4**	**1.5**

Rating as of December 27, 2022. n.m—not material. Source: S&P Global Ratings.

3. 'B-' Issuer Downgrade Risk

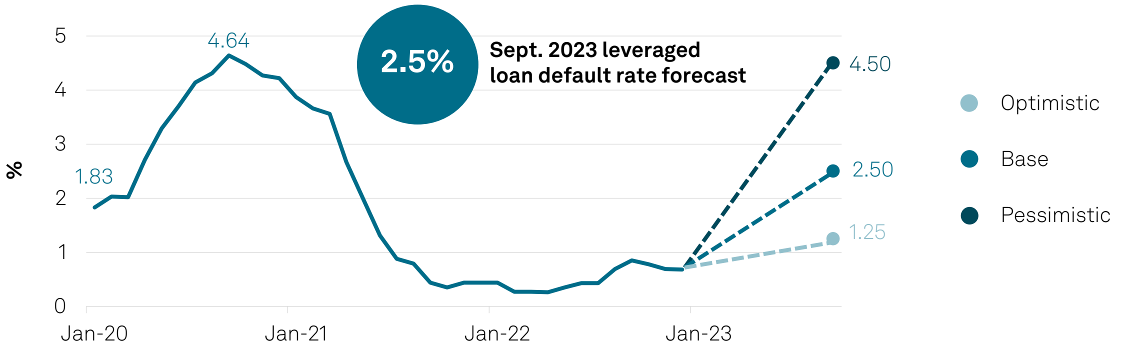
Median Free Operating Cash Flow (FOCF)-to-Debt for 'B-' Issuers



f-forecast. Source: S&P Global Ratings.

4. Leveraged Loan Default Forecast (Sept. 2023)

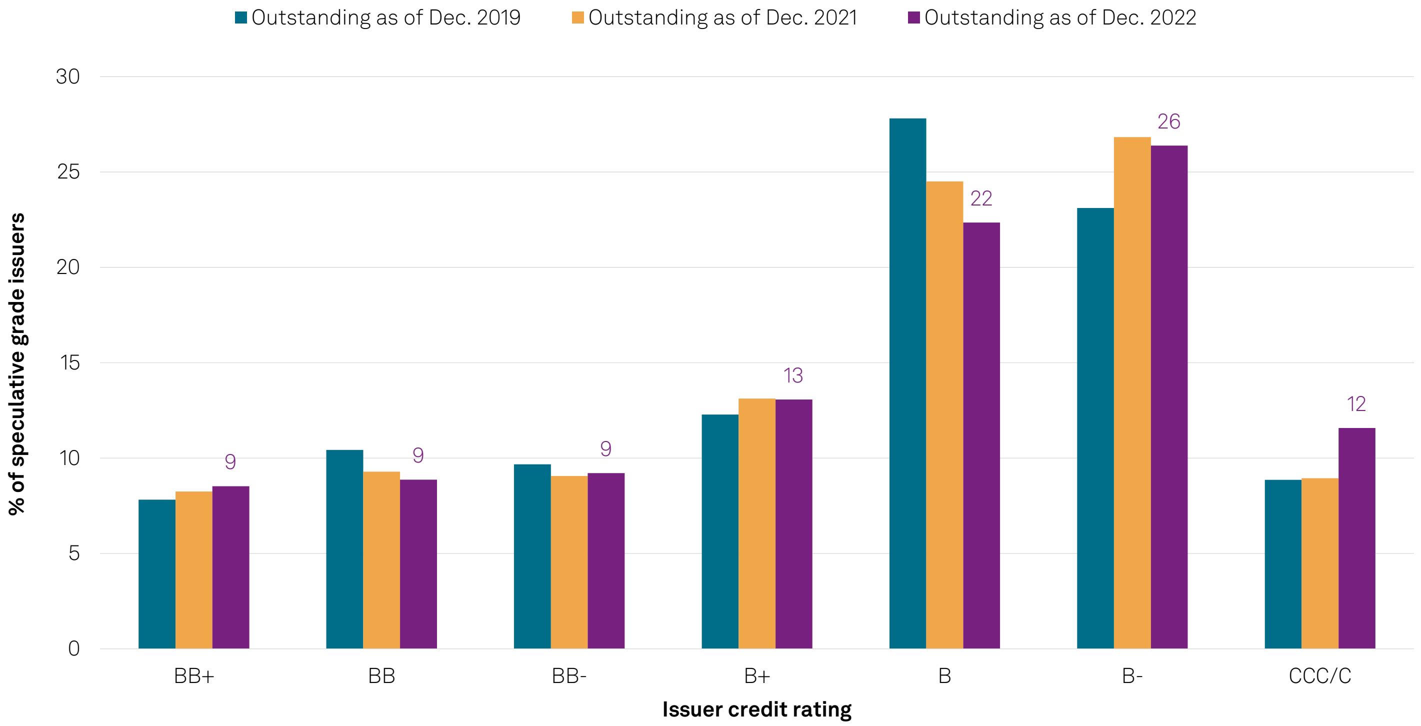
LSTA US Leveraged Loan Index



Source: S&P Global Ratings.

Ratings Distribution | 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 (ICR): U.S. And Canada

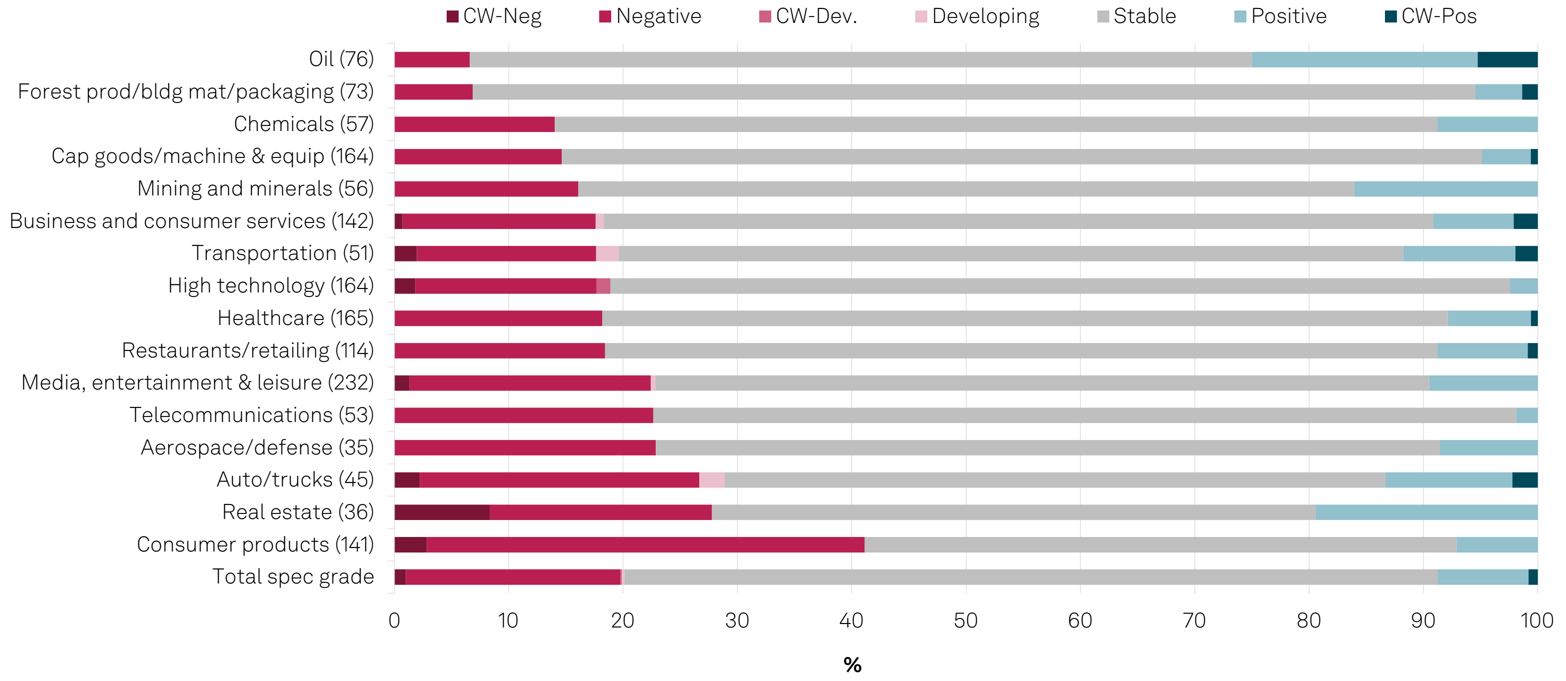


- About 60% of our speculative-grade issuer ratings are concentrated at 'B' and lower.
- If the 'B-' issuers downgrade rate increases to the 22% longer-term average, the percentage of issuers rated in the 'CCC/C' category could increase to the mid-to-high teens percentage.

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

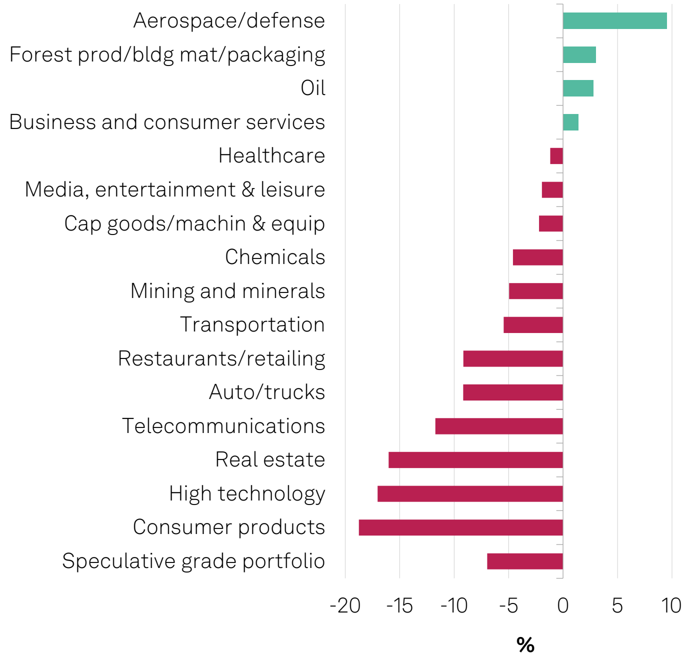
Downgrade Risk | The Likelihood Of Downgrades In 2023, Based On Our Rating Outlooks, Is Rising, But Remains Below The Historical Average Of About 25%

Spec.-Grade Rating Outlook By S&P Global Ratings Sector: U.S. And Canada



As of Jan 20, 2023. Source: S&P Global Ratings.

Changes In 2022

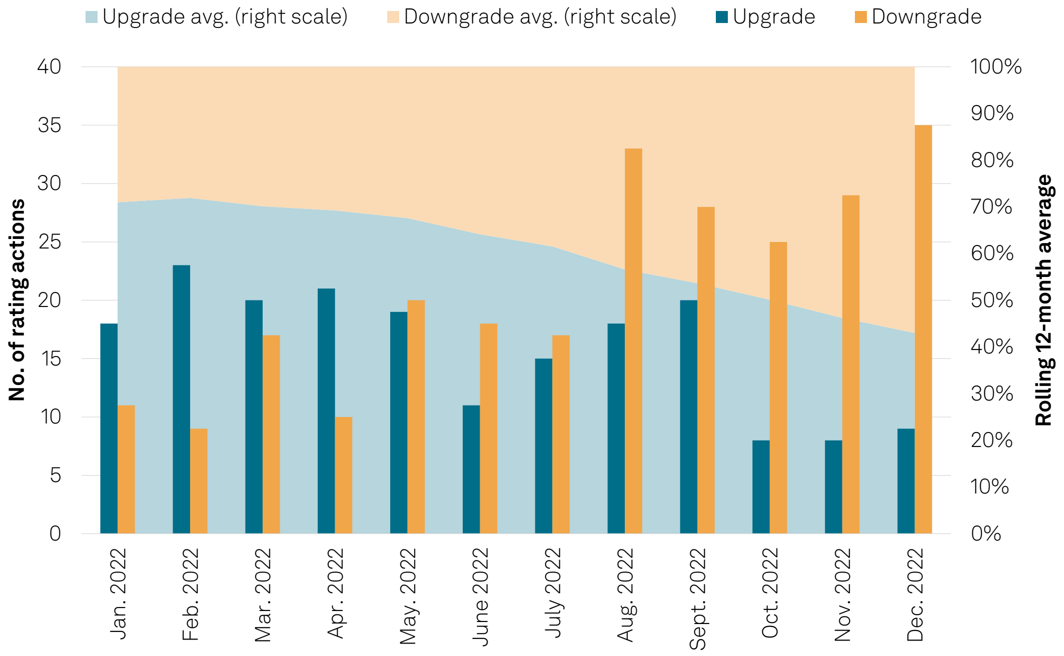


Source: S&P Global Ratings.

Ratings Mix | Credit Trends Turn Negative As Economic Tailwinds Flag And Headwinds Mount

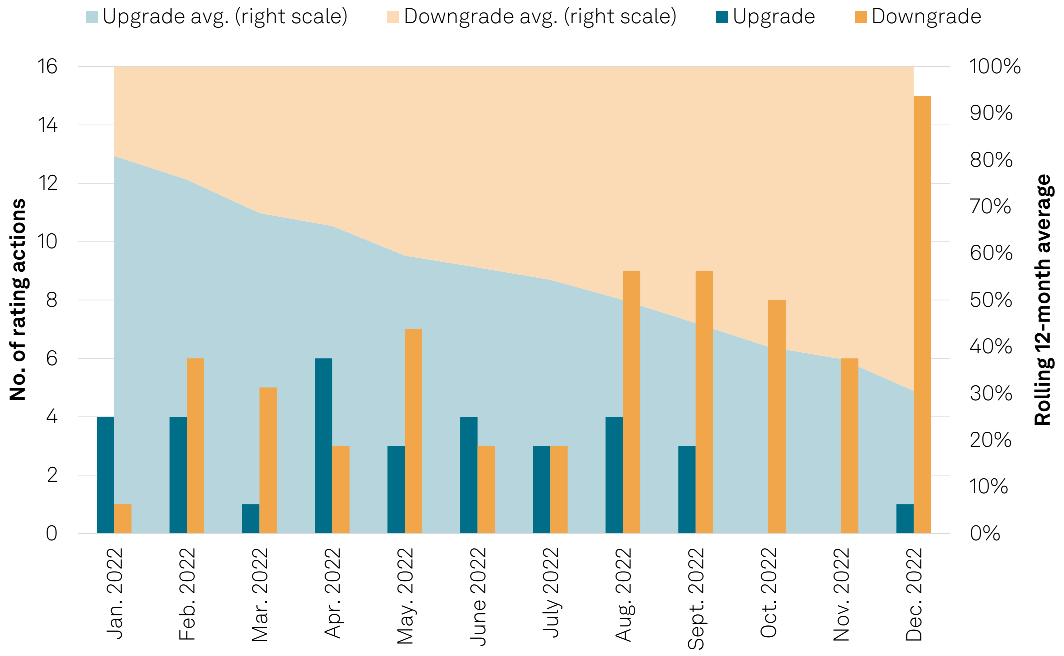
Slowing economic growth blunted the tailwinds that supported speculative-grade issuer ratings improvements (U.S. and Canadian nonfinancial corporates) in 2021, with positive net rating momentum reversing in May 2022.

Speculative-Grade Upgrades And Downgrades



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

Ratings Coming Into/Out Of 'CCC'/'CC' Categories



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

Credit Trends | Earnings Growth Slows; Cash Flow Generation Falls

Speculative-Grade Earnings Growth (U.S. And Canada)

Industry	Entity count (no.)	Median EBITDA growth Q/Q (%), reported last 12 months						
		Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022
Aerospace/defense	28	-2.6	1.6	3.7	6.7	-1.2	-0.2	0.4
Auto/trucks	28	16.6	28.2	1.2	3.5	-0.2	4.3	1.2
Business and consumer services	79	4.0	5.9	4.2	3.0	2.4	1.8	2.9
Cap goods/machine and equipment	107	3.6	5.4	1.9	1.9	3.7	4.8	4.6
Chemicals	31	5.8	13.1	8.7	4.9	5.5	2.9	-0.9
Consumer products	86	7.8	8.8	1.8	1.4	-1.0	0.6	-1.6
Forest prod/building material/packaging	46	7.9	11.3	1.3	1.0	7.4	9.4	4.0
Health care	98	8.6	9.1	3.3	0.6	-1.2	-2.0	-2.2
Media, entertainment, and leisure	148	2.3	25.1	9.4	5.6	5.3	3.5	1.9
Mining and minerals	44	7.0	22.4	15.4	11.2	10.1	7.6	-0.9
Oil and gas	63	1.7	36.0	27.3	37.0	19.0	26.3	18.1
Restaurants/retailing	84	9.4	28.9	1.3	5.3	1.0	-0.8	-0.3
Real estate	20	2.5	6.8	4.6	5.2	3.6	5.0	5.0
Technology	90	7.2	4.9	5.4	4.2	2.5	0.0	0.6
Telecommunications	41	2.4	2.9	0.7	-0.7	-2.2	-2.8	-1.3
Transportation	27	-2.9	22.8	13.0	11.0	2.7	3.4	5.5
Total	**1,020**	**5.1**	**11.0**	**4.7**	**4.1**	**3.0**	**2.4**	**1.5**

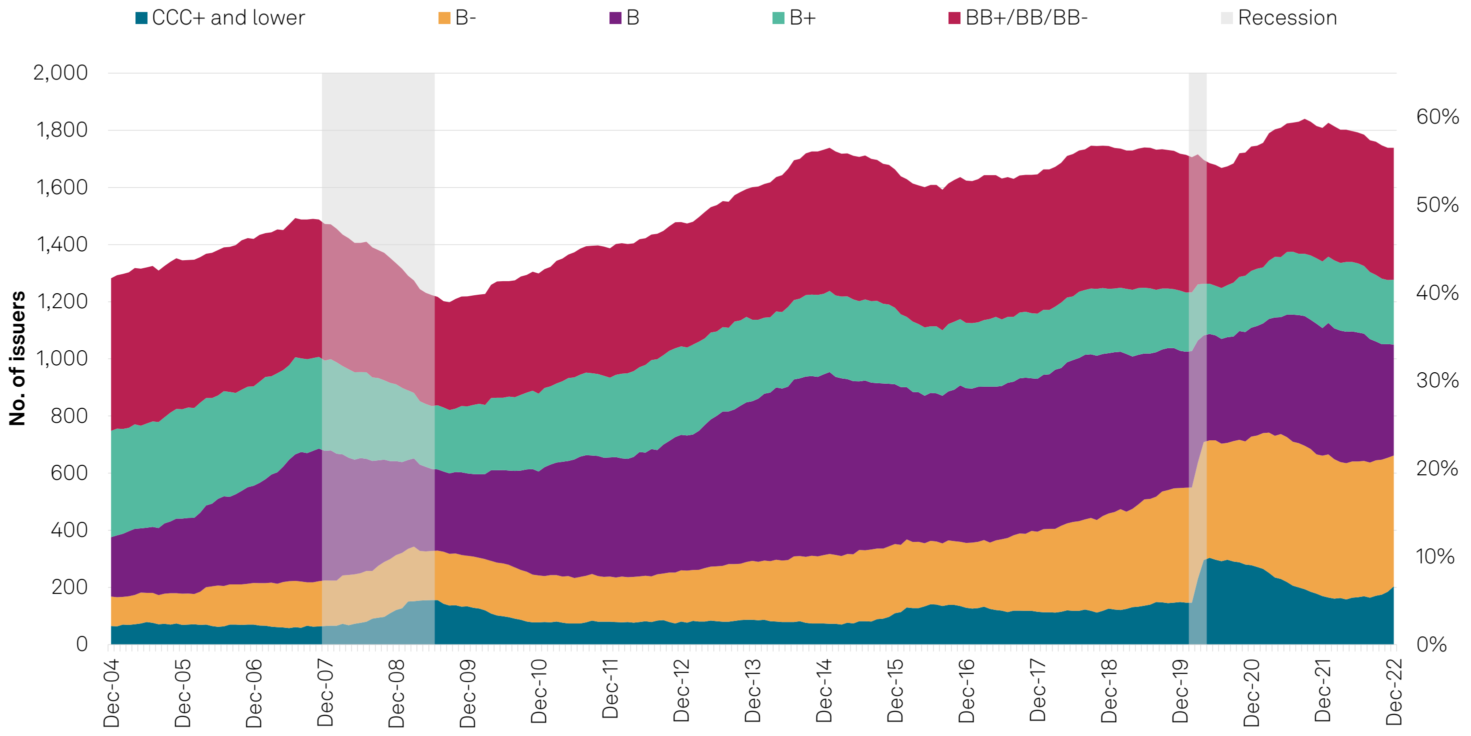
Speculative-Grade Reported FOCF-to-Debt (U.S. And Canada)

Industry	Entity count (no.)	Median free operating cash flow to debt Q/Q (%), reported last 12 months								
		2019	2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022
BB+	105	12.5	17.9	21.9	18.9	19.5	16.7	15.3	12.9	12.8
BB	113	13.7	16.4	16.4	17.2	17.8	14.8	14.7	12.9	14.2
BB-	102	10.0	13.7	18.1	14.7	13.3	11.2	8.0	8.4	6.2
B+	148	5.7	7.5	8.3	8.7	8.7	7.4	6.1	6.0	6.6
B	191	3.5	6.4	6.8	5.7	3.2	3.6	2.3	1.8	1.5
B-	238	1.0	4.2	3.8	2.3	1.2	0.8	-0.1	-1.1	-1.2
CCC+	88	-3.2	0.2	1.1	-1.5	-3.3	-3.6	-4.6	-5.0	-5.2
CCC	23	0.9	3.5	0.2	-1.5	-5.1	-6.1	-6.4	-9.1	-7.6
CCC-	10	-4.7	0.6	0.0	-3.8	-4.3	-6.9	-8.5	-6.6	-5.3
CC	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Total	**1,020**	**4.4**	**6.9**	**7.3**	**6.6**	**5.4**	**4.5**	**3.2**	**2.5**	**2.1**

*Covers U.S. and Canadian nonfinancial corporate ratings. Rating as of Dec. 27, 2022. Leverage is calculated as reported gross debt over reported EBITDA, without adjustment by S&P Global Ratings.
The sample in this study is 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. Source: S&P Global Ratings U.S. and Canada ratings.

Credit Trends | 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 Dec. 31, 2022)



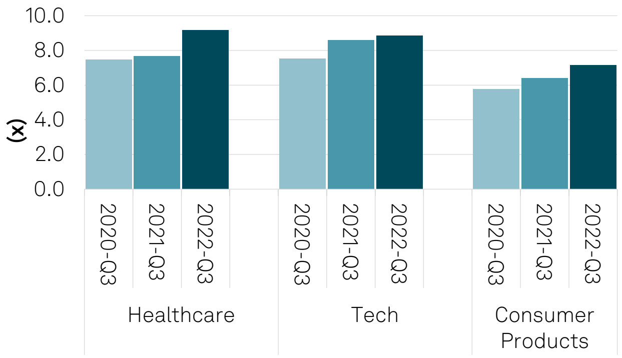
Data as of Dec. 31, 2022. Source: S&P Global Ratings.

- **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 Global Financial Crisis
- **Issuers rated 'CCC+' and below have increased to almost 12% but remain lower than the roughly 16% from Dec. 2020.** The median proportion of this population over the 18-year time series 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.

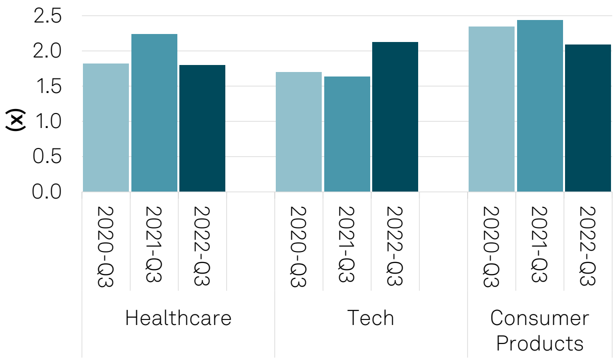
Credit Trends | 2023 Credit Measures Forecasts For Sectors With High Concentration In CLO Portfolios Are Generally Favorable...For Now

‘B’/’B-’ Ratings – Healthcare, Tech, And Consumer Products

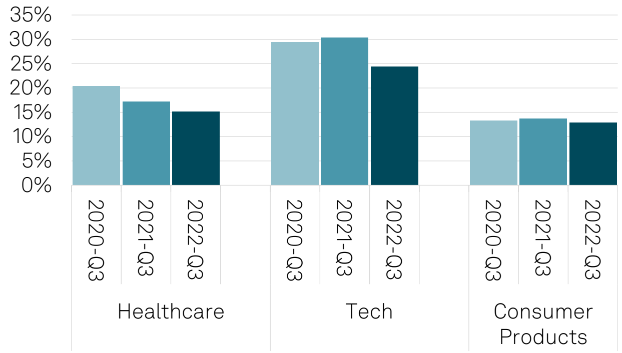
LTM Debt Leverage (Median, Adjusted)



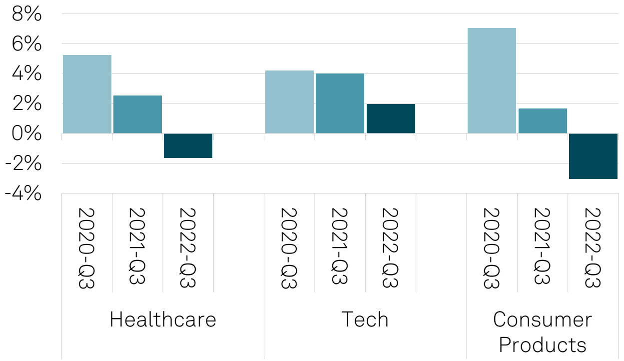
Reported EBITDA Cash Interest Coverage (Median, Reported)



EBITDA Margins (Median, Adjusted)



Reported FOCF-to-Debt (Median, Reported)

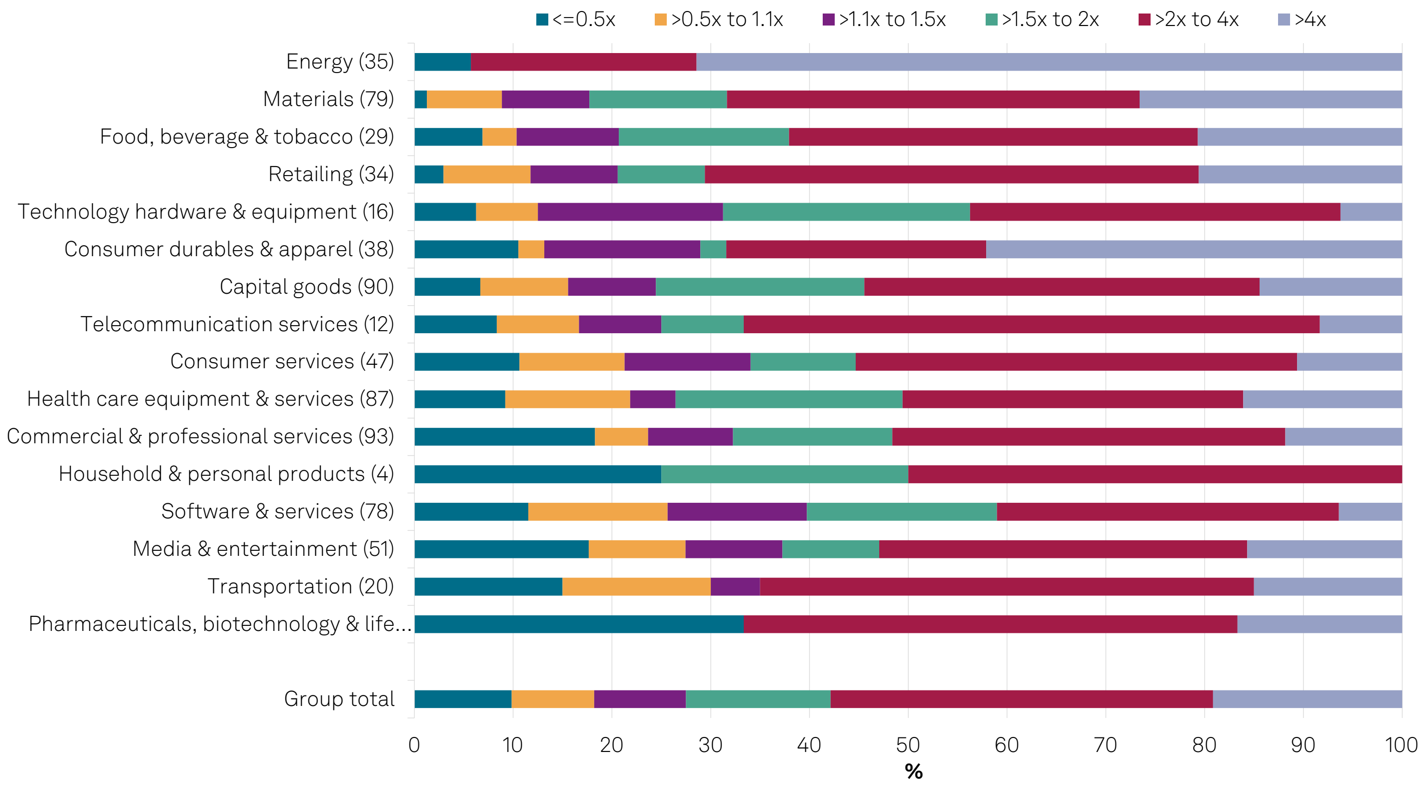


- In 2022 we saw broad weakness in adjusted leverage, EBITDA margins, cash interest coverage, and free operating cash flow within tech, healthcare, and consumer products ‘B’ and ‘B-’ issuers. FOCF deficits likely drove the high number of downgrades in healthcare and consumer products.
- Positive sentiment for 2023 reflects, among other things, China’s reopening, reduced supply chain bottlenecks and inflation, improved cash flow from inventory destocking, less aggressive financial policies, and resilient tech spending.

Source: S&P Global Ratings.

Credit Trends | "Higher-For-Longer" Interest Rates And Credit Spreads Will Likely Pressure Debt Sustainability For Many 'B'/'B-' Issuers

'B'/'B-' Ratings By GICS: GAAP Reported 2022-Q3 LTM EBITDA Cash Interest Coverage

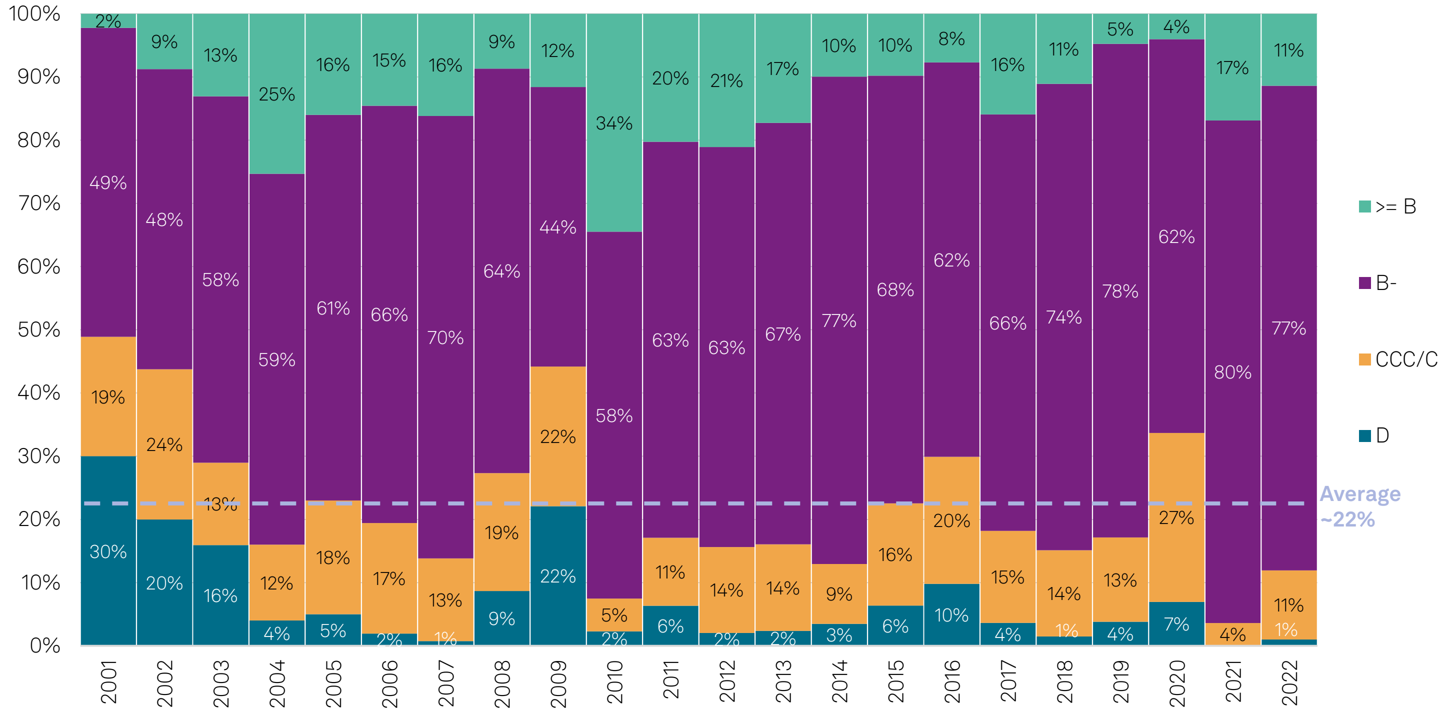


- The group total for 'B' and 'B-' issuers with interest coverage of <1.1x has decreased modestly to about 17.7% LTM from 18.1% at the start of 2022. However, the percentage with interest coverage less than 0.5x declined to 9% from 9.8%
- Transportation, pharmaceuticals, biotechnology, and life sciences saw the most improvement.
- Food, beverage and tobacco, and household and personal products saw the largest decline.

Data reflects U.S. and Canadian corporate speculative-grade issuers covered by U.S. or Canadian-domiciled analysts. *Credit measures reflect metrics from the last available quarterly financial statements with most from Sept. 30, 2022. Sectors excluded: Financial and Insurance Services, Real Estate, and Utilities or industry groups with less than three issuers. The sector classification reflects global industry classifications standard (GICS) industry groups and might not reflect the respective S&P sector classifications. LTM--Last 12 months. Source: S&P Global Ratings.

Credit Trends | 'B-' Issuer Downgrades Spike Well Above 30% In Recession Years

The Movement Of The 'B-' Issuer Pool From The Start–To–The End Of The Year



- The worst year for 'B-' issuer downgrades was 2001 when 49% of 'B-' issuers were lowered. In the 2009 and 2020 recessionary time periods, the percentage downgraded was 44% and 34%, respectively (compared to 2001-2022 average of about 22%).
- Issuers upgraded out of the 'CCC' category normally increases in the year following the recessionary period. In 2010 and 2021, approximately 32% and 31% were upgraded, respectively (compared to 2001-2021 median/average of about 13%/14%).

Data as of December 2022. Reflects a static portfolio and one year rating transitions. Excludes financial and insurance services.
Source : S&P Global Ratings CreditPro.

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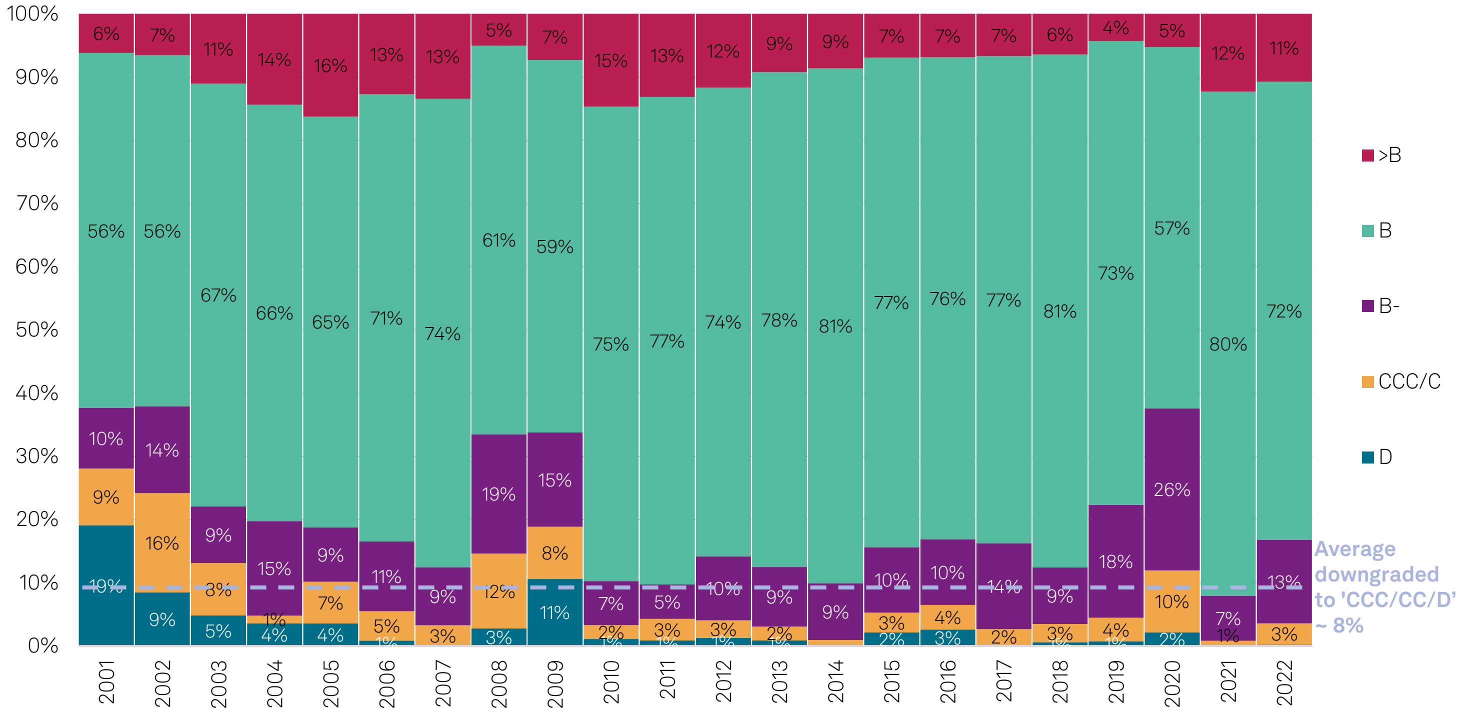
Credit Trends | ‘B’ Issuer Downgrades to the ‘CCC’ Category and Below Can Jump Above 10% In Recession Years

The Movement Of The ‘B’ Issuer Pool From The Start–To–The End Of The Year



- Issuers downgraded to the ‘CCC’, ‘CC’, and ‘D’ from ‘B’ averaged 8% from 2001-2022.
- Issuers downgraded to ‘B-’ from ‘B’ averaged 12% from 2001-2022.
- Unsurprisingly, downward transitions spike in years of economic stress.

Data as of December 2022. Reflects a static portfolio and one year rating transitions. Excludes financial and insurance services.
Source: S&P Global Ratings CreditPro.

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Issuer Stress Testing | Assessing ‘B-’ Issuers “At Risk” Of A Downgrade Under Downside Scenarios

Assessing “At Risk” Credits in the Aggregate ‘B-’ Issuer Portfolio

Color Key: Increase in the percentage of ‘B-’ issuers “at risk”

<=25%	26%-35%	36%-45%	>=46%

Reported EBITDA margin stress

Interest rate increase	Sample 461	+15% (16.7 median margin)	+10% (16.0%)	5% (15.3%)	0% (14.5%)	-5% (13.8%)	-10% (13.1%)	-15% (12.4%)
	0% (5.9% median debt cost)	19%	21%	22%	25% LTM	26%	31%	34%
	1% (6.9%)	23%	24%	25%	28%	30%	33%	38%
	2% (7.9%)	25%	26%	27%	32%	34%	38%	44%
	3% (8.9%)	26%	30%	31%	36%	39%	43%	48%
	4% (9.9%)	31%	33%	36%	40%	42%	48%	52%
	5% (10.9%)	34%	36%	39%	44%	48%	54%	58%

Last 12-month data reflect the last available financials as of Dec. 22, 2022, which includes a mix of Q3 and earlier financials. About 74% of LTM financials reflect Q3 reporting and 90% reflect Q3 or Q2 reporting. For this study, we define an “at risk” issuer as one that meets three of the following four credit factors under alternative stress scenarios: (1) reported free operating cash flow (FOCF) deficits * -2 < current cash balances; (2) reported leverage >= 8.5x; (3) reported cash interest coverage <= 1.1x; and (4) reported FOCF-to-debt <= (3%). Source: S&P Global Ratings.

Currently, about 25% of our ‘B-’ issuers are at risk of a rating downgrade based on last-12-month credit measures. Their credit measures met at least three of the following four metrics:

- Reported FOCF deficits * -2 > current cash balances;
- Reported leverage > 8.5x;
- Reported cash interest coverage < 1.1x; and
- Reported FOCF-to-debt < (3%).

If credit measures do not improve as expected, possibly due to a protracted recession, the population of highly vulnerable issuers will sharply increase over the next 12 months.

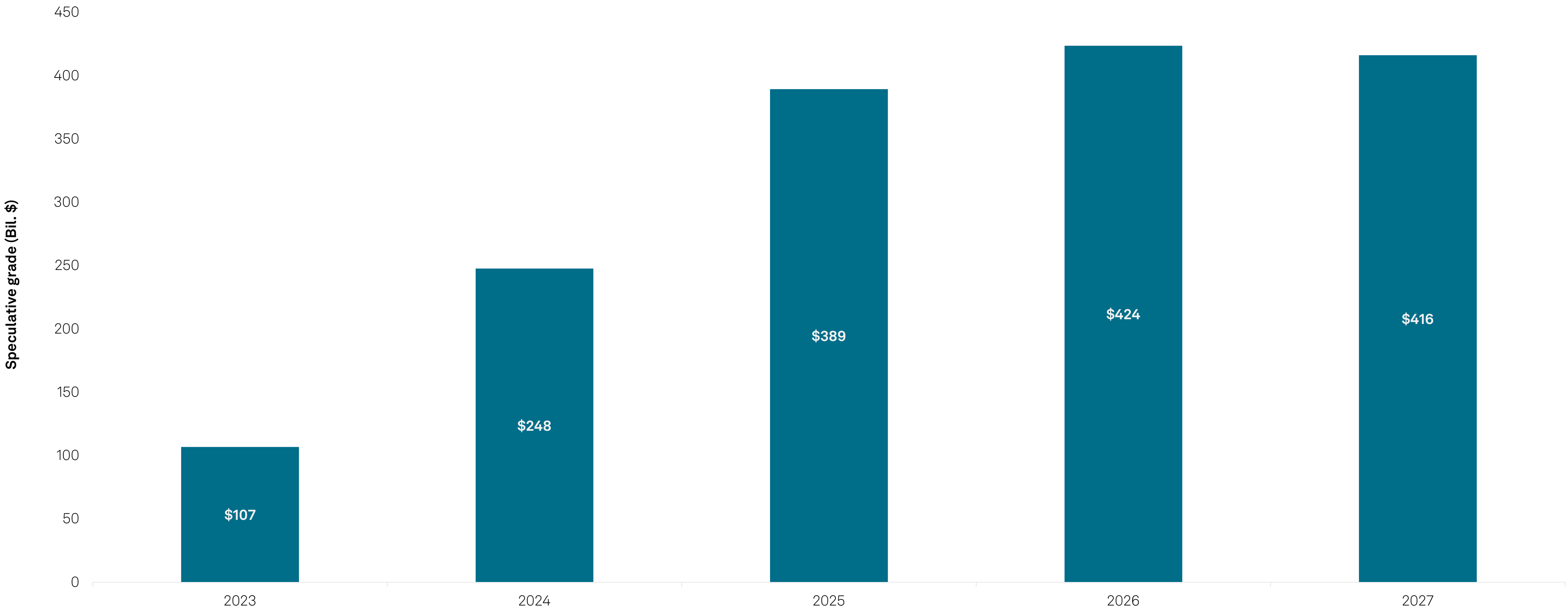
Corporate Ratings Surveillance | 'CCC' Ratings – A Picture Or 1,000 Words of Criteria?

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

- In contrast, a company with a 'B-' rating would currently have capacity to meet its financial commitments, but this ability could be easily impaired by modest levels of underperformance or adverse shocks.

At 'B-', a viable path to improve credit measures still exists

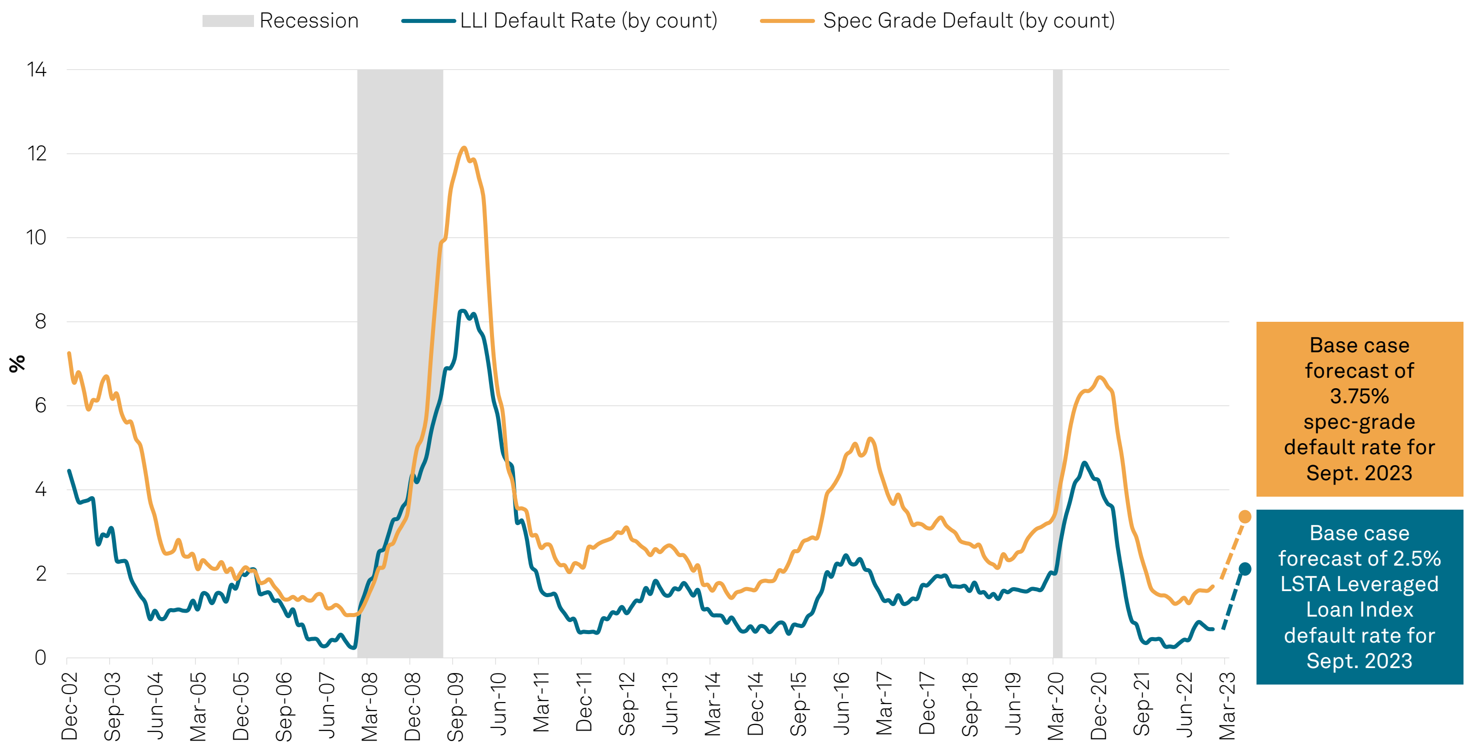
Maturity Wall | Maturity Wall Remains Largely Manageable In The Near Term



Data as of Jan. 1, 2023. Includes bonds, loans, and revolving credit facilities that are rated by S&P Global Ratings from U.S. nonfinancial issuers. Source: S&P Global Ratings.

U.S. Default Rates | Defaults Could Double By Q3 2023, Would Reach Historical Average LL Index (at 2.5%), Remain Below For SG Overall (4.1%)

LTM Default Rates (Including Estimates Through YE 2022 (By Issuer Count)



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.

Two Default Rate Forecasts:

- Our overall spec-grade default rate is calculated on an issuer count basis for all bond and loan defaults, **including** selective defaults.
- Default rates for the LSTA US Leveraged Loan Index (LLI) **exclude** bond defaults and selective defaults.
- Selective defaults are significant, representing -47% of all spec.-grade defaults in 2020 and -64% in 2021, and ~60% in 2022.
- After spiking in late 2020, default rates declined rapidly, but began to increase in second-quarter 2022. At year-end 2022, the leveraged loan and spec-grade default rates were 0.7% and 1.7%, respectively.

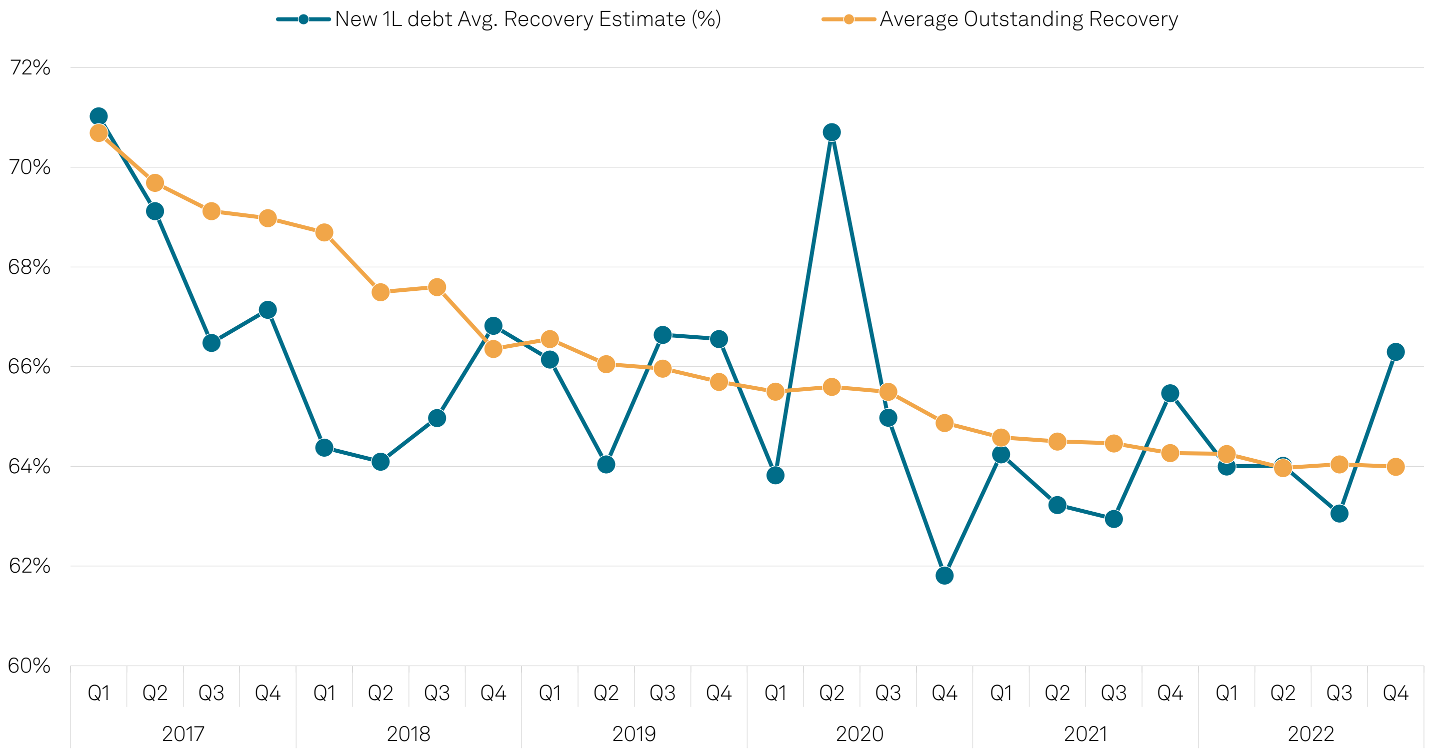
Forward-view: Default risks are increasing

- For the U.S., our spec.-grade default forecast (issuer count) for Sept. 2023 is 3.75% (base case; range 1.75%-6.00%).
- For the LSTA Leveraged Loan Index, our default rate forecast (issuer count) for Sept. 2023 is 2.5% (base case; range 1.25%-4.50%).

S&P Global Ratings

Recovery Rates | First-Lien Recovery Expectations Are Now Well Below Historical Averages

Expected Recovery On Newly Issued And Outstanding First-Lien Debt (U.S. And Canada)

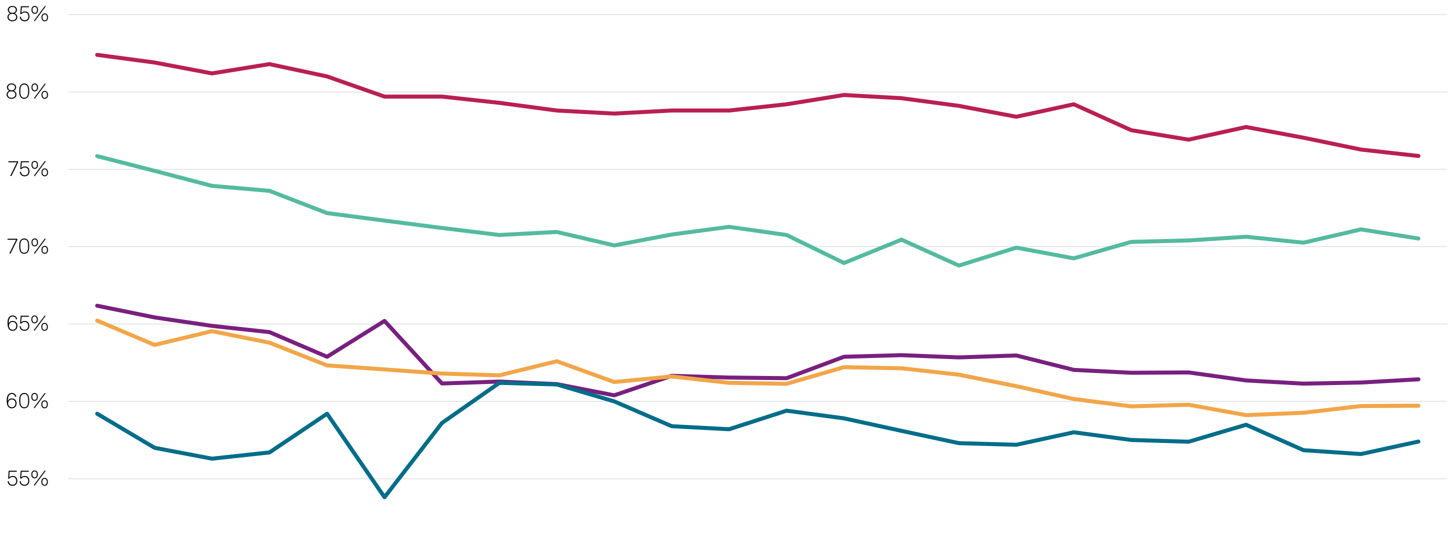


Data through Dec. 31, 2022, based on the rounded point-estimates included in our recovery ratings for rated nonfinancial corporate entities in the U.S. and Canada. Source: S&P Global Ratings.

- 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), although estimated actual recoveries have been mostly at the low end of this range or lower in recent years.
- Additionally, average actual first-lien recovery rates in recent years have been lower, with significant variability.
- **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 it's a secondary factor.

Recovery Rates | 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
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%
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%
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%
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%
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%

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.

- 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-').**

Downside Risk | Aggressive Loan Restructurings Impair Recoveries

Collateral transfers and priming loan exchanges

Comparison of the Expected Recovery Impairment From Select Loan Restructurings

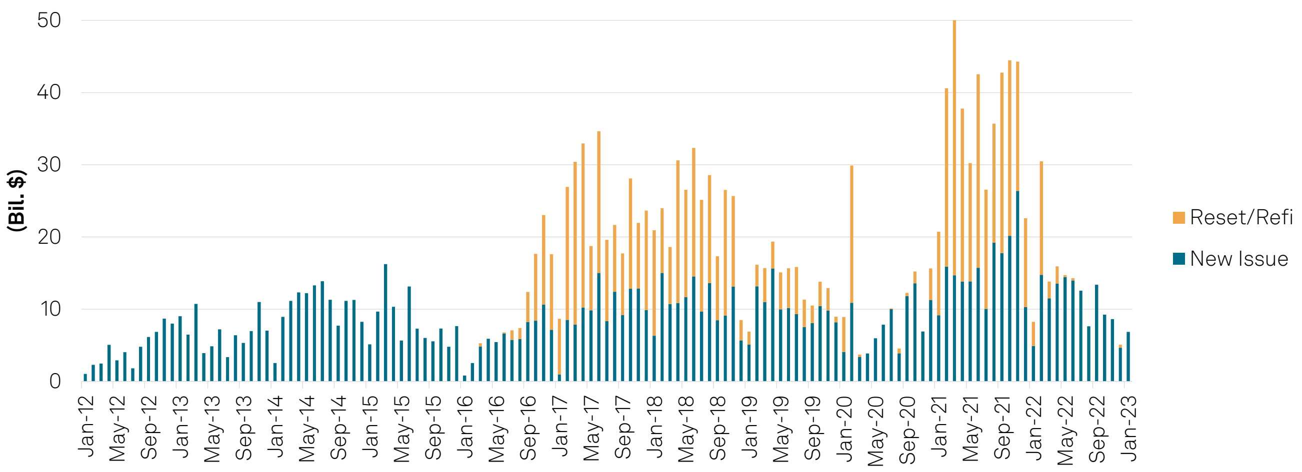
	Collateral transfers	Dates	RR% before	RR% after	Change 1L % par
1	J.Crew	7/2017	40	15	**-25**
2	PetSmart	6/2018	60	45	**-15**
3	Neiman Marcus	9/2018	55	55	**0**
4	Cirque du Soleil	3/2020	75	75	**0**
5	Revlon	5/2020	40	15	**-25**
6	Party City	7/2020	75	45	**-30**
7	Travelport	9/2020	75	0	**-75**
8	Envision Healthcare	4/2022	50	30	**-20**

	Priming loan exchanges	Dates	RR% before	RR% after	Change 1L % par
1	Murray Energy	6/2018	65	0	**-65**
2	Serta Simmons	6/2020	55	5	**-50**
3	Renfro #1	7/2020	35	20	**-15**
4	Boardriders	8/2020	55	5	**-50**
5	TriMark/TMK Hawk #1	9/2020	55	0	**-55**
6	GTT	12/2020	50	40	**-10**
7	Renfro #2	2/2021	20	10	**-10**
8	TriMark/TMK Hawk #2	7/2022	60	30	**-30**

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.

U.S. BSL CLOs | Down But Not Out: 2022 U.S. CLO New Issuance Is Second Highest On Record

U.S. CLO New Issuance And Reset/Refi Volume By Month (2012–Jan. 2023)



U.S. CLO Issuance ($ billions), 2012 through 2022 plus 2023 forecast

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023f
New issue	54.26	82.43	124.1	98.91	72.3	118.07	128.86	118.47	93.54	187.06	129.32	**100 - 120**
Resets/refis					39.73	167.01	155.89	43.79	31.48	251.31	24.77	**25**

f—forecast. Source: S&P Global Ratings and Pitchbook LCD.

- After record CLO new issuance volume in 2021, the U.S. CLO market experienced increasing headwinds in 2022 as the macroeconomic outlook clouded over.
- Our forecast for CLO new issuance in 2023 is $110 billion based on several things:
- In 2021, U.S. bank treasury departments bought billions of CLO whole ‘AAA’ tranches because they were flush with deposits from quantitative easing and COVID-19 stimulus checks, and CLOs offered a compelling relative value.
- Now bank deposits are modestly declining, and treasuries are yielding north of 4% and have a lighter capital charge than CLO ‘AAA’s. A few (not all) of the big banks also increased their capital ratios thru the fourth quarter. So, there is less money for CLO purchases.
- Demand from Japanese banks could increase somewhat depending upon the dollar-to-yen exchange rate, but it is unlikely in 2023 to get back to the levels seen before the pandemic.
- U.S. insurance companies, which are major buyers of CLO mezzanine notes, may be keeping an eye on potential changes to National Association of Insurance Commissioners (NAIC) CLO capital charges as soon as the start of 2024.

U.S. BSL CLOs | CLO Metrics Hit An Inflection Point, Deteriorate Moderately

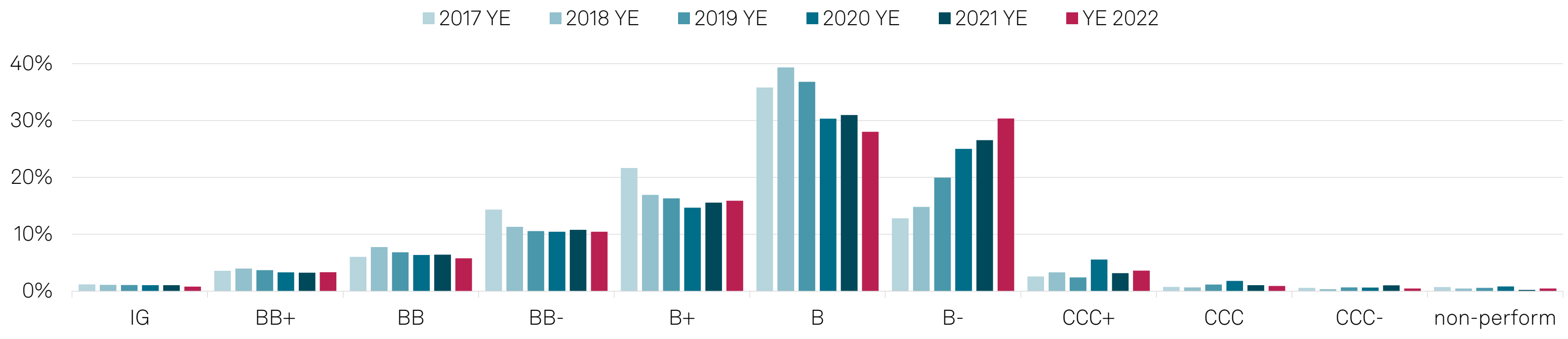
- The CLO Insights 2022 Index U.S. BSL Index (2022 Index) is an index of about 600 S&P Global Ratings-rated U.S. BSL CLOs issued across 121 different CLO managers.
- After improving gradually for most of the first half of 2022, credit metrics across the Index have inflected and deteriorated slightly during the second half:
  - Exposure to obligors with ‘CCC’ ratings increased to over 5.00% by year end, up from a low of 4.00% in August (5.48% by early February).
  - Ratings with a negative bias (negative outlook or CreditWatch Negative) ended the year at 15.32%, up from 11.03% back in May 2022 (almost 16% by early February).
  - The SPWARF ended the year at 2764, up modestly from 2690 in April 2022.
- CLO junior O/C test cushions may have reached a peak for this cycle back in September/October and have since declined slightly.
- Average portfolio turnover across the BSL CLOs reached 30.55% for full-year 2022, compared to almost 50% last year.

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	‘B-’ on Negative Outlook (%)
Jan. 1, 2022	26.41	4.94	0.17	2700	60.44	0.88	12.33	98.79	4.37	99.68	2.00
Feb. 1, 2022	27.16	4.27	0.37	2708	60.43	0.28	11.94	98.83	4.41	99.68	1.92
Mar. 1, 2022	27.09	4.26	0.39	2708	60.41	0.11	11.35	98.02	4.40	99.68	1.66
Apr. 1, 2022	27.44	4.17	0.13	2690	60.45	1.06	10.86	97.88	4.31	99.69	1.59
May 1, 2022	27.76	4.26	0.14	2700	60.45	1.20	9.83	97.57	4.30	99.70	1.41
Jun. 1, 2022	27.70	4.14	0.20	2706	60.48	1.27	10.46	94.60	4.39	99.71	1.43
Jul. 1, 2022	28.59	4.01	0.35	2720	60.27	1.35	11.08	92.19	4.45	99.74	1.80
Aug. 1, 2022	28.70	4.00	0.34	2726	60.32	1.46	11.53	93.81	4.47	99.78	1.94
Sep. 1, 2022	29.00	4.21	0.59	2754	60.24	1.03	12.20	94.85	4.50	99.81	2.08
Oct. 1, 2022	28.85	4.40	0.50	2751	60.16	1.16	13.36	92.12	4.50	99.82	2.86
Nov. 1, 2022	28.85	5.02	0.40	2754	60.13	0.59	14.46	92.40	4.47	99.84	3.31
Dec. 1, 2022	29.50	4.95	0.34	2749	59.81	0.32	14.62	93.08	4.44	99.85	3.48
Jan. 1, 2023	30.03	5.23	0.50	2764	60.20	0.14	15.18	92.88	4.45	99.85	3.84
Feb. 1, 2023	30.09	5.48	0.46	2766	60.26	0.22	15.76	94.40	4.39	99.86	3.94

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.

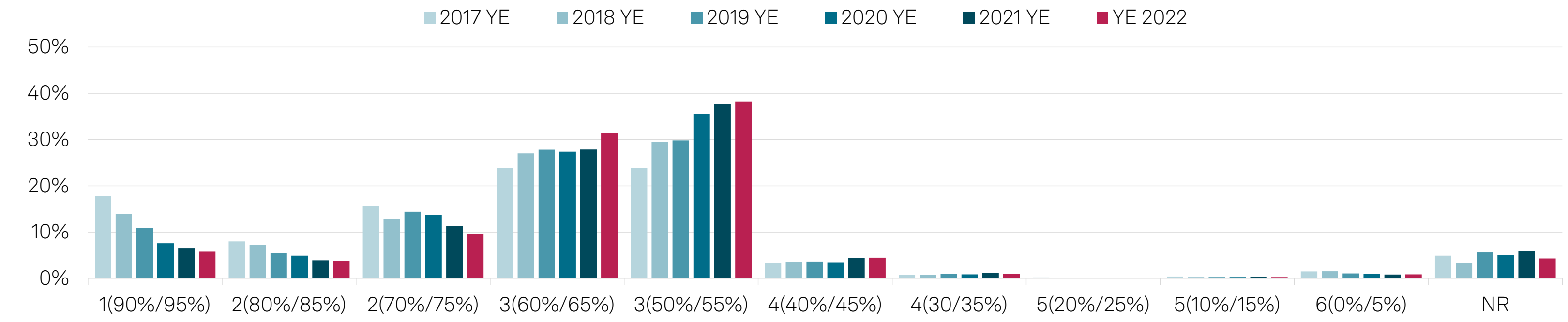
U.S. BSL CLOs | Ratings Mix Shows Increase In Loans From ‘B-’ Rated Companies And Loans With Lower Recovery Ratings

Rating Distribution For Assets In Reinvesting U.S. BSL CLOs (2017-2022)



*Latest data as of Q4 2022. (i)NR not included. NR--Not rated. YE—Year end. Source: S&P Global Ratings.

Recovery Ratings Distribution For Assets In Reinvesting U.S. BSL CLOs (2017–2022)

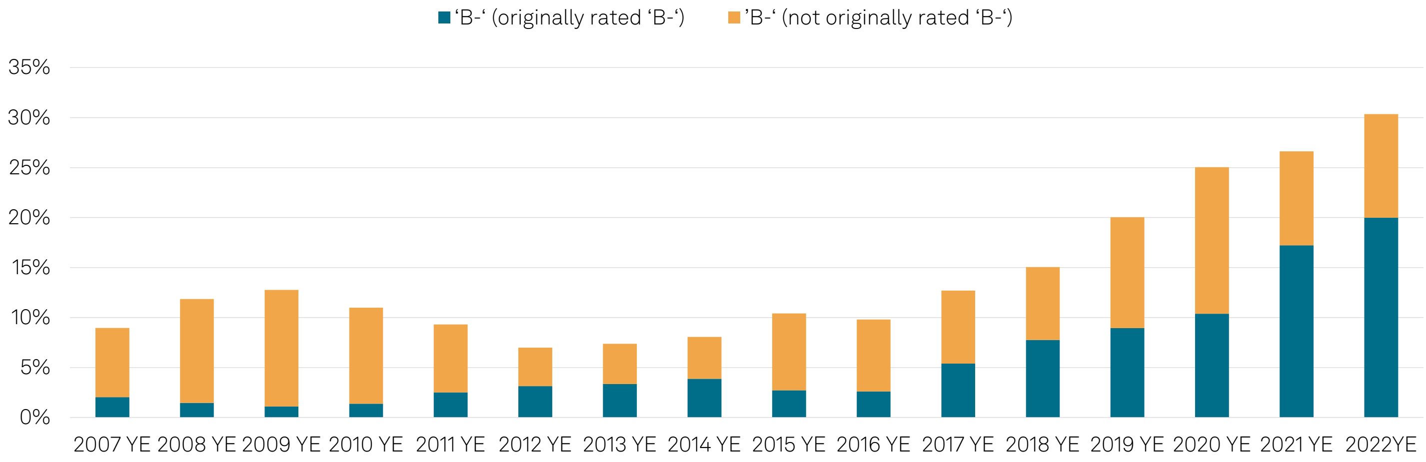


*Latest data as of Q4 2022. *NR not included. NR--Not rated. YE—Year end. Source: S&P Global Ratings.

- Loans from issuers rated ‘B-’ now comprise just over 30% 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% (i.e., the 3L category in the chart) make up over 38% of total CLO asset par by the end of 2022, compared with about 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

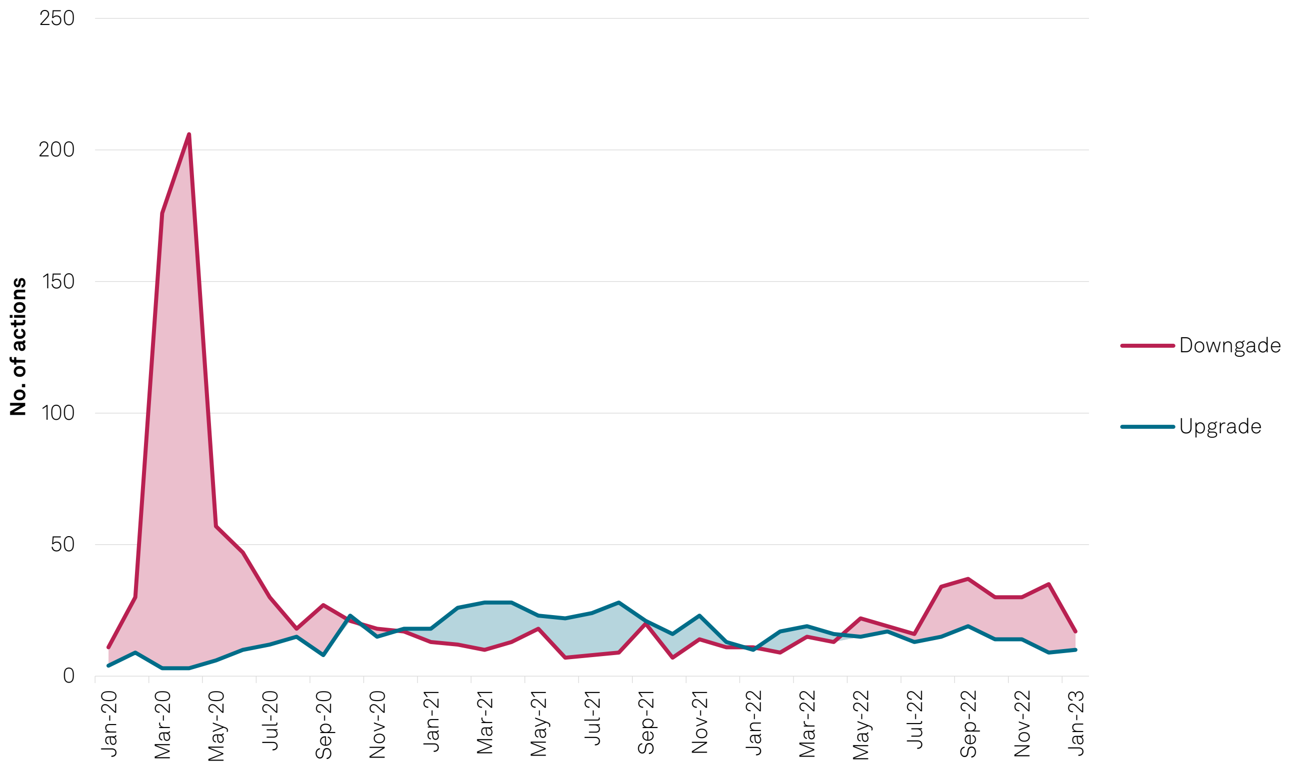
CLO--Collateralized loan obligation. AUM--Assets under management.
Source: S&P Global Ratings.

- ‘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).
- 8.9% of the ‘B-’ exposures across US BSL CLO portfolios at the start of 2022 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 2022 year-end, a majority (two thirds) of the current ‘B-’ exposures are from issuers that were originally rated ‘B-’ (fairly recently) and have not experience rating actions yet.

U.S. BSL CLOs | U.S. CLO Obligor Upgrades And Downgrades (2020-2022)

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 (2020-2022)



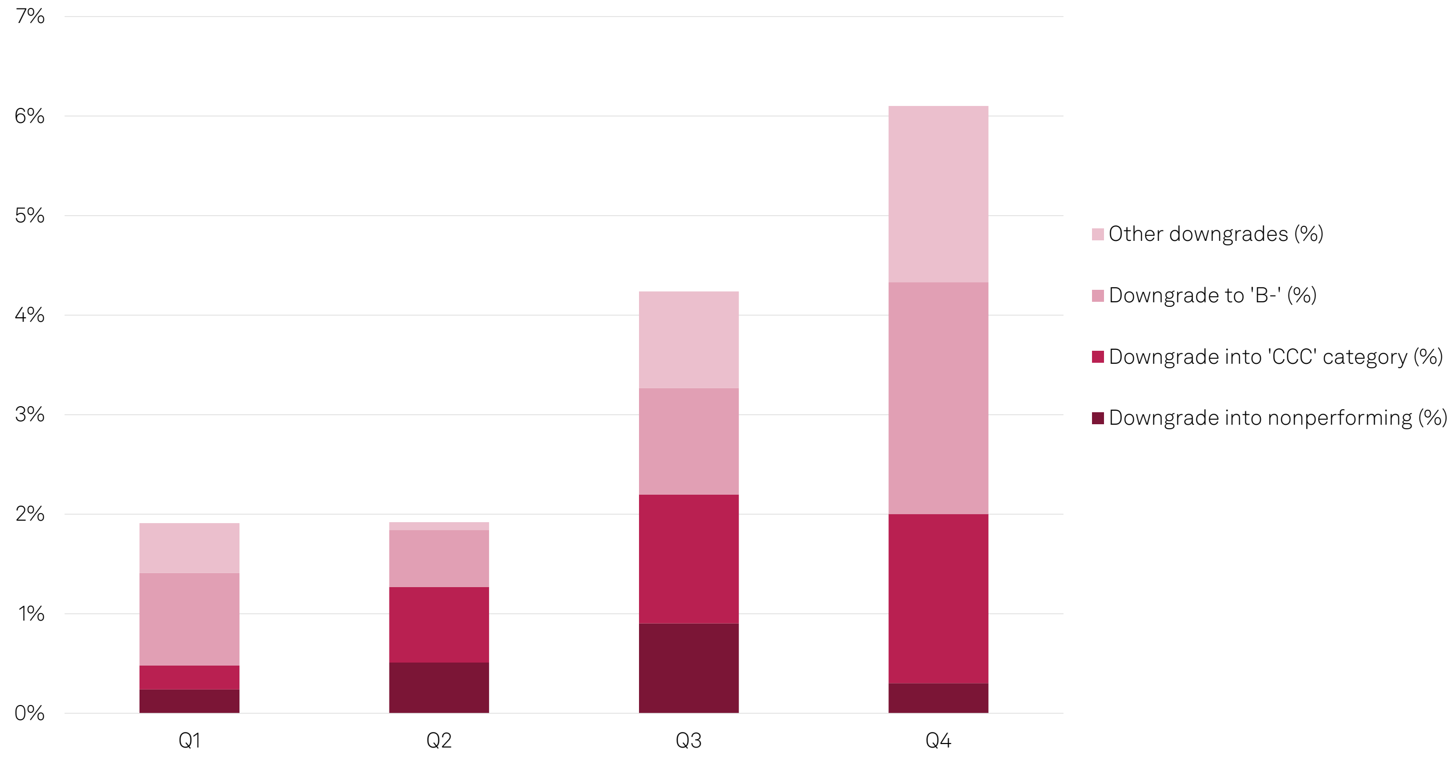
DG—Downgrade.Source: S&P Global Ratings.

Downgrades On U.S. BSL CLO Obligor Ratings In 2022

Month	Total DG	DG to 'B-'	DG into 'CCC' category	DG to below 'CCC-'
Jan-22	11	4	1	1
Feb-22	9	2	4	1
Mar-22	15	3	3	0
Apr-22	13	3	4	3
May-22	22	6	5	3
Jun-22	19	7	3	4
Jul-22	16	7	4	1
Aug-22	34	10	9	3
Sep-22	37	14	9	3
Oct-22	30	7	9	5
Nov-22	30	7	6	2
Dec-22	35	8	15	3
Total	**271**	**78**	**72**	**29**

U.S. BSL CLOs | Corporate Downgrades Start To Impact CLO Assets

Average CLO Assets Downgraded (% Total Par) By 2022 Quarter



Source: S&P Global Ratings.

- Spec.-grade corporate rating downgrades started to exceed upgrades back in May 2022, and accelerated in Aug. 2022.
- The impact of these rating actions 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 in 2022.
- 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.
- In each of the first quarter and second quarter, just under two percent of BSL CLO assets saw ratings lowered; in the third and fourth quarters, this increased to just over 4%and 6%, respectively.
- Downgrades of corporate ratings into the ‘CCC’ range also increased during the fourth quarter.

U.S. BSL CLO Assets | Exposure To Q4 Rating Actions By Top 30 CLO Managers (S&P Rated CLO Count)

CLO manager	Rated reinvesting deals in sample (No.)	Upgrades (%)	Downgrades (%)	Downgrade to 'B-' (%)	Downgrade into 'CCC' category (%)	Downgrade into nonperforming (%)	% portfolio in top 250 (%)	Avg price drop in % of asset trading below 80 (%)	Drop in exposure of asset trading below 80 (%)
Ares CLO Management LLC	25	2.70	7.96%	2.33	3.30	0.53	54.98	3.55	1.07
Octagon Credit Investors, LLC	24	1.64	7.49%	2.34	1.68	0.76	59.63	-2.39	0.49
Credit Suisse Alternative Capital, LLC	23	2.32	4.47%	1.35	1.45	0.06	48.37	-1.66	0.51
Carlyle Investment Management LLC	22	2.27	5.95%	2.57	1.84	0.02	59.80	6.41	2.79
Neuberger Berman Inc.	22	2.56	5.91%	2.65	1.88	0.05	57.31	-0.39	2.03
Oak Hill Advisors LP	21	1.68	3.56%	1.25	0.70	0.00	52.68	1.82	1.79
Commercial Industrial Finance Corp.	19	1.71	5.66%	2.42	1.32	0.24	58.91	-2.36	1.95
Voya Alternative Asset Management LLC	19	2.92	6.93%	2.74	1.49	0.47	57.17	2.68	3.45
BlueMountain Capital Management L.P.	18	2.88	6.52%	2.60	1.41	0.49	49.79	-4.15	1.13
GSO Capital Partners, L.P.	17	1.17	6.96%	3.04	1.97	0.65	65.66	-2.88	3.57
PGIM Inc.	17	2.18	7.09%	2.11	2.00	0.90	53.67	-1.78	1.72
CVC Credit Partners, LLC	15	2.57	7.55%	3.75	1.24	0.08	53.45	-0.16	0.23
Bain Capital Credit LP	14	1.52	7.13%	2.67	2.45	0.41	42.42	-3.89	2.69
Benefit Street Partners LLC	13	2.50	4.62%	1.04	1.74	0.28	58.30	3.35	0.64
Elmwood Asset Management LLC	13	2.02	3.31%	1.25	1.02	0.00	46.72	-6.92	0.29
GoldenTree Asset Management LP	12	2.04	4.69%	2.09	0.69	0.00	52.72	-2.77	-0.46
AEGON USA Investment Management LLC	11	2.83	8.57%	2.65	1.74	1.53	48.54	-5.64	0.93
Blackstone/GSO Debt Funds Europe Ltd.	11	0.99	6.18%	2.77	1.95	0.22	60.07	-6.59	3.38
KKR Financial Advisors	10	2.43	5.90%	1.50	2.88	0.00	42.49	-1.25	0.22
LCM Asset Management LLC	10	2.55	8.52%	3.42	1.89	0.35	48.30	-4.04	2.24
Onex Credit Partners LLC	10	2.02	4.24%	1.20	1.43	0.13	55.13	2.95	1.15
Barings LLC	9	1.48	5.46%	1.99	1.85	0.00	48.69	-0.87	1.92
BlackRock Financial Management Inc.	9	1.40	5.47%	2.85	1.27	0.01	65.60	0.79	0.78
Crescent Capital Group LP	9	2.11	7.51%	3.26	0.66	0.66	53.74	-1.47	5.40
HPS Investment Partners, LLC	9	1.98	4.97%	1.29	2.35	0.20	48.51	-0.32	1.77
Oaktree Capital Management L.P.	9	2.46	4.81%	2.00	1.21	0.00	49.67	0.36	0.53
Redding Ridge Asset Management (UK) LLP	8	2.67	5.22%	2.01	1.48	0.09	63.19	4.75	0.86
TCW Asset Management Co. LLC	8	1.99	6.47%	2.93	1.56	0.31	44.41	0.50	1.75
Allstate Investment Management Co.	7	2.62	4.46%	1.93	1.25	0.00	62.44	4.34	2.12
Anchorage Capital Group LLC	7	1.28	3.65%	0.99	1.03	0.77	34.23	2.76	-0.02

Source: S&P Global Ratings.

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.
- We wanted to look at the impact that portfolio turnover had on CLO credit metrics. To do this, 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, but 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

BSL CLO Assets | Top 25 Companies Purchased And Sold In Fourth-Quarter 2022

Purchases

Company	Rating as of Jan 1	% of Q4 asset purchases	Wtd. Avg. price
TIBCO SOFTWARE INC.	B	3.32%	92.33
OPEN TEXT CORPORATION	BB+	3.01%	97.05
COVETRUS, INC.	B-	1.90%	94.01
ENTAIN HOLDINGS (GIBRALTAR) LTD	BB	1.70%	97.76
DELTA 2 (LUX) S.A.R.L.	BB	1.62%	99.04
FOCUS FINANCIAL PARTNERS, LLC	BB-	1.48%	98.31
USI, INC.	B	1.45%	98.10
GO DADDY OPERATING COMPANY LLC	BB	1.30%	98.14
NEPTUNE BIDCO US INC.	B-	1.17%	89.08
FLUTTER FINANCING B.V.	BB+	1.11%	97.82
DELEK US HOLDINGS, INC.	BB-	1.04%	96.49
CHART INDUSTRIES INC.	BB-	0.94%	97.96
PLAYA RESORTS HOLDING B.V.	B	0.92%	96.62
HUB INTERNATIONAL LTD.	B	0.90%	96.35
MEDLINE BORROWER LP	B+	0.82%	93.46
SOLARWINDS HOLDINGS INC.	B+	0.77%	97.63
STARWOOD PROPERTY MORTGAGE, L.L.C.	BB	0.76%	97.06
CROWN FINANCE US, INC	CCC-	0.75%	93.07
TRANSDIGM INC.	B+	0.74%	97.93
GATES GLOBAL LLC	B+	0.68%	97.21
ASURION LLC	B+	0.67%	87.81
ACRISURE, LLC	B	0.65%	94.66
SPIRIT AEROSYSTEMS INC.	B	0.63%	97.09
ASSUREDPARTNERS, INC.	B	0.63%	96.35
ALTICE FINANCING S.A.	B	0.61%	97.08
CAESARS RESORT COLLECTION LLC	B	0.55%	99.22
CORPORATION SERVICE COMPANY	BB-	0.50%	97.47
NOMAD FOODS LUX S.A R.L	BB-	0.50%	96.74
CITCO III LIMITED	BB-	0.47%	97.51
BLACKSTONE MORTGAGE TRUST INC.	BB-	0.47%	97.06

Sales

Company	Rating as of Jan 1	% of Q4 asset sales	Wtd. Avg. price
BRAND INDUSTRIAL SERVICES, INC.	CCC+	1.22%	89.15
CROWN FINANCE US, INC	CCC-	1.13%	77.02
ASURION LLC	B+	0.91%	93.63
CAESARS RESORT COLLECTION LLC	B	0.76%	99.10
ARTERA SERVICES, LLC	CCC+	0.75%	80.83
BAUSCH HEALTH COMPANIES INC.	CCC+	0.69%	75.48
AMERICAN AIRLINES INC.	B-	0.68%	97.74
DELTA 2 (LUX) S.A.R.L.	BB	0.60%	99.52
INTRADO CORPORATION	CCC+	0.60%	86.59
BAUSCH + LOMB CORPORATION	B-	0.58%	93.76
ATHENAHEALTH GROUP INC.	B-	0.56%	90.86
MEDLINE BORROWER LP	B+	0.56%	93.80
LUMEN TECHNOLOGIES, INC.	BB-	0.55%	94.92
GO DADDY OPERATING COMPANY LLC	BB	0.54%	99.57
SCIENTIFIC GAMES HOLDINGS LP	B+	0.50%	94.54
ALLIANT HOLDINGS INTERMEDIATE, LLC.	B	0.48%	97.37
TRANSDIGM INC.	B+	0.47%	98.24
IRB HOLDING CORP.	B+	0.44%	97.41
HEARTLAND DENTAL, LLC	B-	0.43%	93.77
ACRISURE, LLC	B	0.42%	93.06
FRONERI INTERNATIONAL LTD.	B+	0.40%	96.52
WP CITYMD BIDCO LLC	B	0.40%	99.45
INTELSAT JACKSON HOLDINGS S.A.	B+	0.39%	96.23
UBER TECHNOLOGIES, INC.	B	0.38%	98.74
ALLIANCE LAUNDRY SYSTEMS LLC	B	0.38%	97.15
WHATABRANDS LLC	B	0.38%	96.33
BROOKFIELD WEC HOLDINGS INC.	B	0.37%	98.39
ZIGGO SECURED FINANCE PARTNERSHIP	B+	0.37%	97.15
VERSCEND HOLDING CORP	B	0.37%	98.72
SABRE GLBL INC.	B	0.37%	94.96

Source: S&P Global Ratings.

- Several names purchased in fourth quarter were rated within the ‘BB’ category, many purchased at prices in the high 90s.
- Some of the ‘B’ category rated names purchased in the fourth quarter offered par pickup, purchased at prices in the low-to-mid-90s.
- Fourth-quarter sales of issuers rated ‘CCC+’ and lower likely resulted in par loss for the CLO, but can reduce ‘CCC’ buckets and potential market value haircuts.

U.S. BSL CLO Assets | Purchases And Sales In 2022

	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%

S&P BSL CLO Asset Trades by Company Rating In Fourth-Quarter 2022

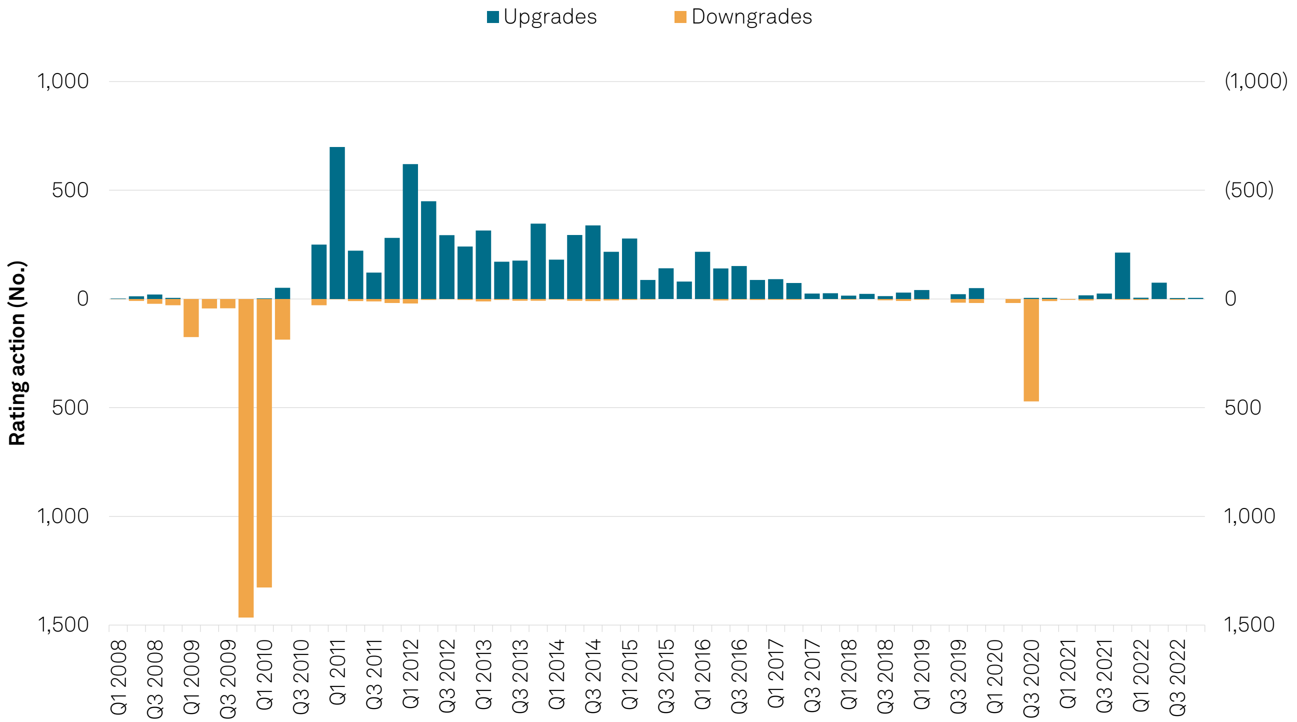
Rating category	Purchase (% of trades)	Avg purchase price	Sales (% of trades)	Avg sale price
Investment grade	0.33%	98.62	0.30%	98.35
'BB' category	29.37%	97.40	22.01%	97.72
'B+'	13.99%	95.69	14.56%	96.35
'B'	28.59%	95.10	23.64%	95.95
'B-'	25.08%	92.83	27.28%	92.22
'CCC' category	2.61%	91.41	11.18%	81.16
Nonperforming	0.03%	86.99	1.04%	50.90

Source: S&P Global Ratings.

- In 2022, the credit quality of the assets (SPWARF) purchased tend to be higher than the credit quality of the assets sold, evidence of CLO manager efforts at de-risking.
- As noted in prior slides, loan prices have declined sharply during the year, reflected in the lower average prices of purchases and sales in the third quarter. The average proportion (avg % of target par) of trades per deal have also declined gradually in 2022.
- The prices of the sales in the third quarter are lower than the purchases (resulting in par loss from these sales); however, the proportion of purchases are greater than sales, helping to offset some of the par loss from sales.
- The proportion of sales of 'CCC' category and nonperforming assets are greater than the proportion of purchases from these rating categories, evidence of managers attempts at de-risking.
- In the fourth quarter, the proportion of 'BB' category purchases are greater than the sales, a switch from the third quarter.

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

U.S. CLO Rating Upgrades And Downgrades (2008-Q4 2022)

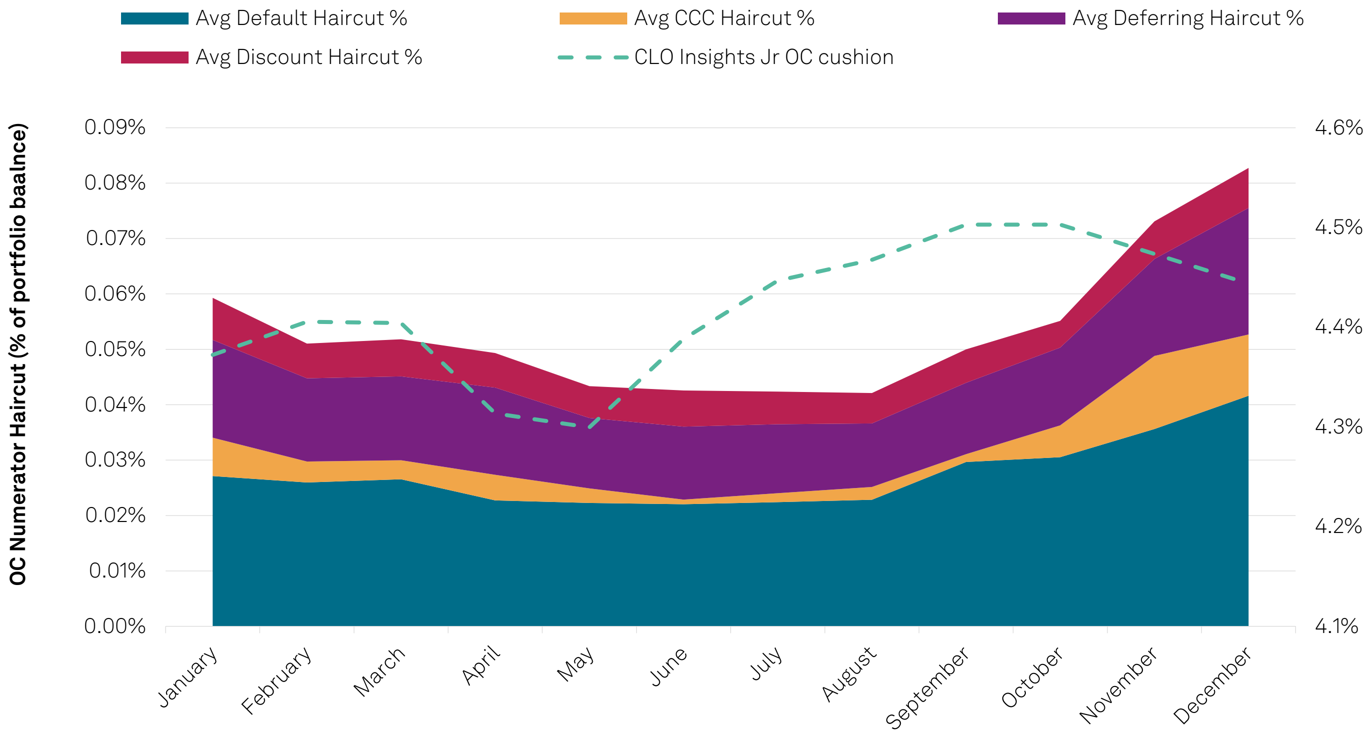


Source: S&P Global Ratings.

- Downgrades to U.S. CLO 1.0 ratings in 2009 and 2010 were mostly driven by the effects of Great Financial Crisis (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 have already been downgraded previously (all 2022 downgrades were lowered into the CCC category or lower).
- At the end of 2022, there were 28 U.S. CLO tranches from 10 pre-pandemic U.S. BSL CLO 2.0s rated within the 'CCC' category.

U.S. BSL CLO Surveillance | O/C Test Cushions And Haircuts In 2022

Average O/C Metrics For Reinvesting U.S. BSL CLOs In 2022



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

- O/C cushions have remained stable for reinvesting U.S. BSL CLOs in 2022, experiencing minimal haircuts during the year (averaging just over 0.08% as a percentage of the par balance of the portfolio) in December.
- The O/C haircuts for the reinvesting U.S. BSL CLOs mostly came from default exposures, followed by haircuts from exposure to deferring assets ('CCC' haircuts were minimal for most of 2022 before increasing slightly in the fourth quarter; most deals were not close to breaching their 7.5% threshold, though a few pre-pandemic transactions exceeded the 7.5% threshold).

U.S. CLO Tranche Defaults | As Of January 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(ii)	Currently rated	Original rating	Defaults	Currently rated
AAA (sf)	1,540	0	0	3,463	0	1,508
AA (sf)	616	1	0	2,773	0	1,224
A (sf)	790	5	0	2,315	0	1,088
BBB (sf)	783	9	0	2,101	0	1,070
BB (sf)	565	22	0	1,710	3	879
B (sf)	28	3	0	378	8	180
Total	4,322	40	0	12,740	11	5,949

Likely Future Defaults: U.S. CLO Tranches Currently Rated 'CCC-' Or 'CC'

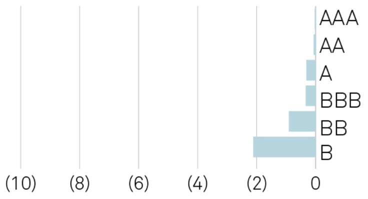
Transaction	Tranche	Year originated	Original rating	Current rating
Avery Point IV CLO Ltd.	F	2014	B- (sf)	CC (sf)
BNPP IP CLO 2014-II Ltd.	E	2014	BB (sf)	CC (sf)
Catamaran CLO 2014-2 Ltd.	E	2014	B (sf)	CCC- (sf)
Halcyon Loan Advisors Funding 2012-1 Ltd.	D	2012	BB (sf)	CC (sf)
Halcyon Loan Advisors Funding 2013-1 Ltd.	D	2013	BB (sf)	CC (sf)
Hull Street CLO Ltd.	E	2014	BB (sf)	CC (sf)
Hull Street CLO Ltd.	F	2014	B (sf)	CC (sf)
Mountain View CLO 2014-1 Ltd.	F	2014	B- (sf)	CCC- (sf)
Staniford Street CLO Ltd.	E	2014	BB (sf)	CCC- (sf)

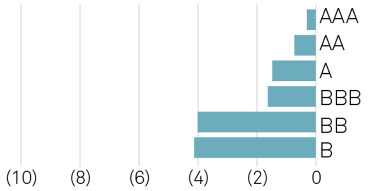
- S&P Global Ratings has rated **more than** 17,000 U.S. CLO tranches since our first CLOs in the mid-1990s. Our CLO ratings history **spans three recessionary periods**: the dot.com bust of 2000-2001, the global financial crisis in 2008-2009, and the recent COVID-19-driven downturn in 2020.
- Over that period, a total of 51 U.S. CLO tranches **have defaulted:** 40 U.S. CLO tranches from CLO 1.0 transactions originated in 2009 or before, and another 11 U.S. CLO 2.0 tranches.
- On the date these 11 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 six 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.

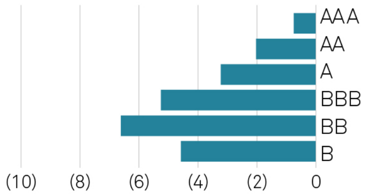
U.S. BSL CLO Rating Stresses | Scenarios 1-4 (Default And ‘CCC’ Stresses)

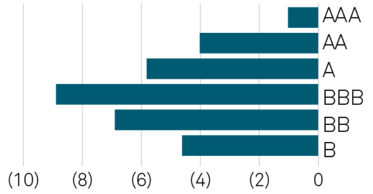
Scenario		Impact across CLO sample
5/10 scenario	526 issuers see ratings lowered, including 267 issuers that default	15% of CLO assets experience downgrades; average 'CCC' bucket increases to 10.2%; average nonperforming exposure increases to 4.6%; average par loss of 2.5%
10/20 scenario	747 issuers 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, and 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)

5/10 scenario

Cash Flow Results Under "5-10" Scenario (2022)

Current rating category	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	≥ -7 (%)	Avg notches	Investment grade (%)	Speculative grade (%)	'CCC' (%)	Non-performing (%)
'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)

Current rating category	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	≥ -7 (%)	Avg notches	Investment grade (%)	Speculative grade (%)	'CCC' (%)	Non-performing (%)
'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)

Current rating category	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	≥ -7 (%)	Avg notches	Investment grade (%)	Speculative grade (%)	'CCC' (%)	Non-performing (%)
'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)

Current rating category	0 (%)	-1 (%)	-2 (%)	-3 (%)	-4 (%)	-5 (%)	-6 (%)	≥ -7 (%)	Avg notches	Investment grade (%)	Speculative grade (%)	'CCC' (%)	Non-performing (%)
'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 | S&P Rated CLOs That Have Transitioned From LIBOR (As Of Feb. 1st, 2023)

Deal Name	Comments	Credit Spread Adjustment (CSA)	Transition Year
Greywolf CLO III, Ltd. (Re-issue) III	Supplemental Indenture	26 bp	2022
Greywolf CLO IV, Ltd. (Re-issue) IV	Supplemental Indenture	26 bp	2022
Voya CLO 2013-2 Ltd.	Supplemental Indenture	26 bp	2022
Voya CLO 2013-3, Ltd 2013-3	Supplemental Indenture	26 bp	2022
Voya CLO 2014-1, Ltd.	Supplemental Indenture	26 bp	2022
Voya CLO 2016-1Ltd	Supplemental Indenture	26 bp	2022
Peaks CLO 1, Ltd.	Supplemental Indenture	26 bp	2022
Madison Park Funding XXIV, Ltd.	Supplemental Indenture	26 bp	2022
ORCC Financing II LLC	Supplemental Indenture	26 bp	2022
Greywolf CLO VI, Ltd.	Supplemental Indenture	26 bp	2023
Greywolf CLO VII, Ltd.	Supplemental Indenture	26 bp	2023
Fortress Credit BSL III LLC	Supplemental Indenture	26 bp	2023
Fortress Credit BSL V LLC	Supplemental Indenture	26 bp	2023
Fortress Credit BSL VI LLC	Supplemental Indenture	26 bp	2023
Fortress Credit BSL VII LLC	Supplemental Indenture	26 bp	2023
Dryden 36 Senior Loan Fund	Supplemental Indenture	26 bp	2023
Great Lakes CLO V Ltd.	Benchmark Transition trigger	26 bp	2023

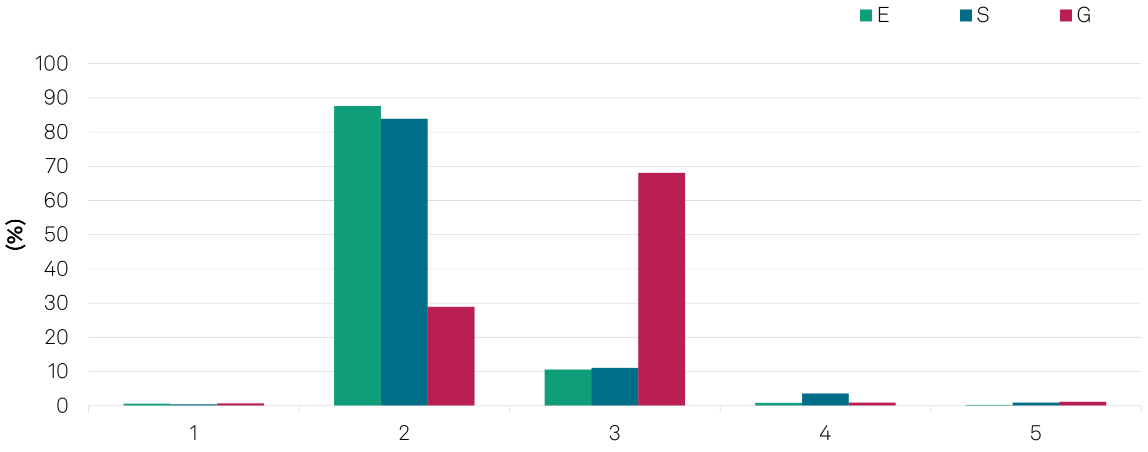
Source: S&P Global Ratings.

- At the start of 2023, about 26% of U.S. BSL CLO portfolios are indexed to SOFR, up from near zero at the start of 2022.
- In 2022, at least nine rated U.S. CLOs have transitioned from LIBOR to SOFR.
- In January 2023, at least eight rated U.S. CLOs have transitioned so far.
- One middle-market CLO has transitioned from the benchmark transition trigger (58% portfolio indexed) to SOFR as of the January 2023 trustee report.
- So far, all deals that have transitioned to SOFR (from LIBOR), have done so with a credit spread adjustment of 26 basis points (bps).
- As of the start of 2023, about 170 rated U.S. CLOs have tranches indexed to SOFR (either new issuance at SOFR, refinanced to SOFR, supplemental indenture, or via benchmark transition trigger).
- About another 900 rated U.S. CLOs still have tranches indexed to LIBOR, a large majority of which have Alternative Reference Rates Committee (ARRC)-like transition language.

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

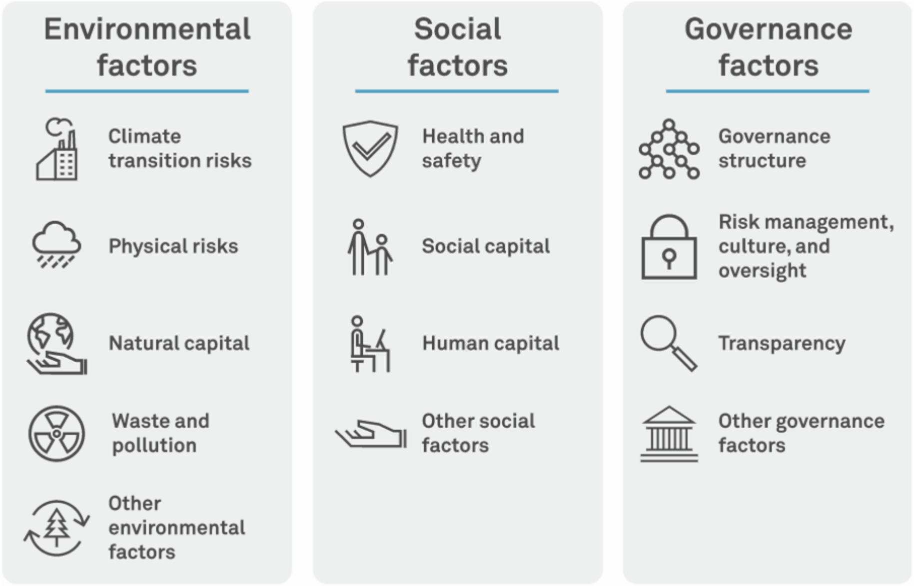
- The influence of environmental, social, and governance (ESG) factors in our credit rating analysis of global CLOs primarily depends on the influence of ESG factors in our analysis of the underlying obligors. This influence is reflected in our ESG credit indicators for the underlying obligors, where 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



Source: ESG Credit Indicator Report Card: Global CLOs, published Nov 24, 2022.

Examples Of ESG Credit Factors



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